

This is the story of a young idealistic student of IIT Kanpur who in 1974 at the age of 24 went to USA to pursue higher education. He left a very lucrative career in US to come back and work in rural India in 1981 and in the process of developing technologies for rural applications discovered himself.

Dr. Anil K Rajvanshi has written in an engaging and lively style the memoirs of his stay and experiences in America in 1970s. It is an inspiring story and should appeal to all Indians including non-resident Indians (NRIs) and students aspiring to go abroad and who want to make a difference in India, especially the rural India.

An advance copy of the book was put on the web and it elicited tremendous positive response worldwide.



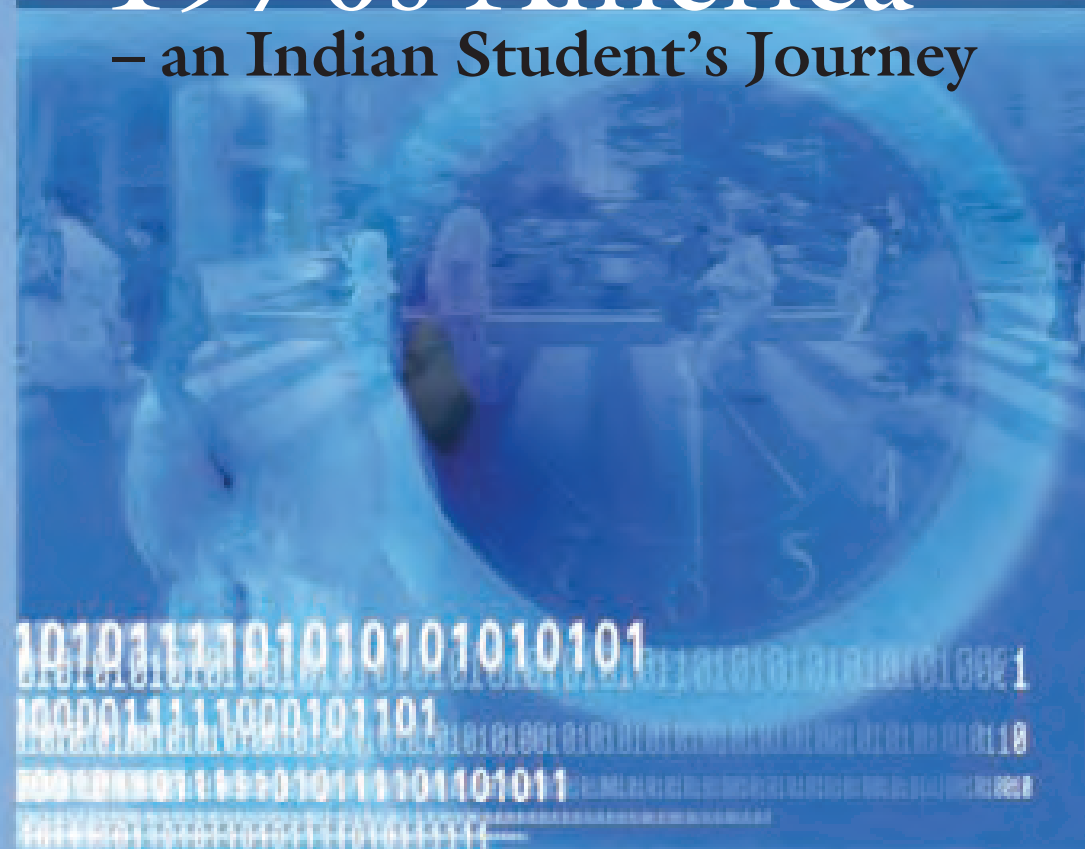
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1970s America – an Indian Student's Journey

Anil K Rajvanshi NARI

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## – *An Indian student's journey*

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*Dedicated to the memory of my father*  
**Jagdish Prasad Rajvanshi**  
*(1917-2006)*



# Preface

I went to US for higher education in 1974 and came back to rural India in 1981. This is the story of my experiences in America in 1970s both as a graduate student and as a faculty.

America in 1970s was a very nice, open and courteous society and I really enjoyed the graduate student experience. I have tried to capture it as best as possible based upon my 30 year old memories. If an event or names of people and places have been wrongly depicted then I apologize for the mistakes and blame it on my failing memory rather than any intentional misrepresentation.

As one grows older there is an urge to pen down the experiences that have shaped ones life. My stay in US was one such experience.

It has been little more than 25 years since I came back to India. In late 1981 when I returned, rarely any Indian with an IIT degree came back. Even the few who did come back went to big cities like Bombay, Delhi, Bangalore etc. I went straight to rural Maharashtra which was as alien to me as any foreign country since I hardly knew the local language or the milieu! This was so as I had mostly spent my life staying in cities in Northern India.

Why did I do it and was it worth it? This is the story which I have tried narrating in the epilogue.

This is also the story of my self-discovery and I have always thanked the higher forces for giving me a place in rural Maharashtra - no matter how small - where I could think deeply on various issues including that of rural development, work on them and write about them.

I really thank my wife Nandini and my younger daughter Madhura who went through the narrative with a fine tooth comb. Many thanks are due to Mr. Sanjay Aherrao for typing innumerable versions of the draft.

Phaltan, June 2007

Anil K. Rajvanshi

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## *Chapter 1*

# **Government Scholarship**

The desire to go to US was kindled in me in my 9th standard. St. Francis High School in Lucknow where I studied from 3rd standard to Indian School Certificate, used to show regular documentary films from various consulates every month. Occasionally they would get a film from United States Information Service (USIS) in Lucknow. I remember very vividly that once a USIS film on 1964 New York International Fair was shown. I was dazzled by what I saw in the film since it was a show case of all the latest gadgets of modern life. Similarly another USIS film was about a train journey from New York to San Francisco as it went through the breathtakingly beautiful landscape of US. Both these films made a tremendous impression on my young mind.

Similarly when I was in IIT Kanpur (IITK) I used to regularly see films at USIS whenever I came home to Lucknow for vacation. Quite a few of these films were about rockets and US space program of 1960s. All these films created a desire to go and visit this great country. Besides I always wanted to be a teacher and knew that without getting a Ph.D. good teaching position will not be available.

In 1972 during my last semester in B.Tech in IIT Kanpur I had applied to quite a number of universities in US for graduate studies. I forget the exact number, but it was about 10 or

so. I got admission in a few of them (without aid) including University of Florida, Ohio State University and a promise of aid from Marquette University. However, nothing substantial materialized so I decided to take admission in M.Tech at IITK only.

I did however get couple of jobs through the campus placement in companies including a handsome paying job in Defense Research Development Organization (DRDO). However the desire to do Ph.D. in US was very strong and hence I thought that the best course of action will be to do M.Tech at IITK and then again apply to US universities.

In those days (1972) going to US was not easy, since IIT was still not a brand name and American Universities had not opened up to a large scale influx of India students as they did later on. Even though some of my seniors from IITK were in good schools like MIT, University of California, Berkeley, Stanford University etc., getting into them was not very easy. Besides in 1972 it was very difficult to get any information regarding schools and colleges in US since it took about 2-3 months to get a reply to ones queries from US universities. In our IITK library there was only one book on graduate studies in US universities and colleges and it was continuously checked out. Even if you got it after great difficulty, there were quite a number of pages torn out of it and so one never knew which colleges or universities were missing from it.

Applying to US universities was not cheap. The application fee for every College or University was about US \$ 10. So

when we applied we gave all sorts of excuses for not paying this fee. Some of the clever students wrote beautiful essays detailing the poverty in India and how with tremendous shortage of foreign exchange they were unable to pay the fees. Nonetheless all of us used to write that if selected we would send the fees. Most of the universities bought into this story. Later on when such essays started pouring into the US university system on a large scale they got wiser and stopped accepting applications without fees.

In June 1974 I was in the final stages of finishing my M.Tech in Mechanical Engineering and even then there was no hope of getting into US though I had received a few admissions without aid. Meanwhile I had befriended two American professors, one from University of Michigan, Ann Arbor and the other from University of California, Berkeley. Both of them were visiting IITK for varying lengths of time and thus I came to know them well. They both agreed to take me as a graduate student if I applied. In any case such an event never happened since a golden opportunity of getting Government of India national scholarship for study abroad appeared.

One of my senior colleagues in Mechanical Engineering had received the national scholarship. These scholarships were introduced by the Ministry of Education, Government of India to help needy students to go to U.K. or US for their Ph.D. in cutting edge areas of engineering and other sciences. These were very handsome fellowships which gave to and fro airfare plus a princely monthly stipend of US \$ 250/month plus the entire course fees.

I applied for the fellowship and lo and behold got a call for interview sometime in July. The experience of my seniors suggested that getting it will be a breeze because the largest numbers of students chosen were from IITs.

However, I had not yet finished my M.Tech and the call letter clearly stated that the M.Tech certificate had to be presented at the time of the interview. In any case I took a chance and went for the interview.

During my M.Tech I had become extremely interested in Solar Energy utilization. My M.Tech thesis was on development of a novel solar water heater. With the OPEC crisis of 1973, solar energy had become a hot topic in the west specially US. I read almost everything on it from the material available at IIT Kanpur library. Based upon my readings I wrote my first editorial article on latest developments in Solar Energy in *Hindustan* – a daily Hindi newspaper published from New Delhi. This timely article was published in 1973 and immediately brought in good amount of fan mail.

I wanted to do further research in Solar Energy. In this connection I had already corresponded with quite a number of major US universities which were doing R&D in Solar Energy and all of them had advised that I should work with one Dr. Erich Farber in University of Florida (UF), since he seemed to have done maximum work in developing useful and working devices running on solar energy. I already had an admission from UF but without aid. And so the National

Scholarship interview letter was like a god sent opportunity to go to US.

So I arrived at the appointed time of 9 a.m. for interview in Shastri Bhavan, New Delhi where the Ministry of Education had its office.

The office clerk asked for my M.Tech certificate and when I told him that I will get it in a few days since I had already submitted my thesis but the date of defense had not yet been announced, he simply said that my application was rejected. Even my explanation that M.Tech defense in IITK is an internal matter and is done very rapidly, did not cut any ice, because he did not know anything about these matters.

Being young and impetuous I told him that he had no authority to reject my application and should consult the committee members regarding it. In fact I asked him who the committee members were and he refused to divulge their names. The only concession he made was to give me the name of the chairman of the committee.

I felt my explanations and sternness may have had some effect since he went to the committee with my application after underlining heavily by red pencil the clause that I did not have the M.Tech certificate.

After 10 minutes he came out of the meeting room and told me that the committee has rejected my application and what

was more no traveling or daily allowance (TA/DA) for coming to attend the interview would be paid to me!

In this hour of crisis when my whole life seemed to go down the drain, getting TA/DA was the last thing on my mind. Yet I was amazed at the bureaucratic efficiency of that clerk who had thought of all issues including TA/DA!

I still remember those words clearly because they sounded a death knell to all my dreams of getting an American education. I felt extremely dejected. Nevertheless in such times the mind races very fast so I tried to find out whether anybody could influence the committee members to at least interview me. I was very sure that if I am allowed the opportunity to give the interview then I will be selected. I had tremendous faith in my ability to convince the committee of my candidature and was also prepared to give in writing that I will present my M.Tech certificate in 10 days time.

Suddenly I realized that one of my distant uncles Dr. Atma Ram, who was an ex-Director General of CSIR and a very well respected name in the scientific community, might know the committee chairman. Dr. Atma Ram used to live on Dr. Rajendra Prasad Road about half km from the Shastri Bhavan. So I rushed to his place (almost ran) and told him about the whole thing. He said that he would call the chairman since he knew him well and that I should go to the interview venue. I somehow felt that Dr. Atma Ram might not have the influence that he implied he had, so I should search for some other source.

Then I went to the house of my father's friend Shri. Sunder Lal. Shri. Sunder Lal was a Senior Congress Member of Parliament (M.P.) and used to live in Canning Lane – quite a distance from Shastri Bhavan.

Sunder Chachaji (uncle) as I used to call him listened to my predicament and thought for a few minutes. He then dialed a number and told me to go and see one Mrs. Rohan Lal Chaturvedi, the wife of another senior congress M.P. who was also a junior minister in Mrs. Indira Gandhi's cabinet.

I immediately went to Mrs. Chaturvedi's house and was met by her son Manoj Chaturvedi. He was quite a talkative person and started chatting with me. It was nearly 12:30 p.m. and I was getting nervous since the interview time was slipping. I kept on reminding Manoj that I had to meet his mother but he kept on bypassing the issue. Suddenly his mother appeared and asked me who I was. When I told her who I was she reprimanded me by saying what I was doing there when I should have been in Shastri Bhavan and told me to immediately see the Secretary education who was the member secretary of the interview committee.

I immediately rushed to Shastri Bhavan and waited till 2 p.m. outside the committee room when the lady secretary came out to meet me.

I narrated my whole story to her and told her that I was ready to give an undertaking in writing that I will present my M.Tech certificate in 10 days. I must have talked to her for



about 45 minutes, but felt that it made an impact on her. She told me to wait in the lobby and that I will be called for the interview at 5 p.m. Many a times it has happened to me that when the chips are down, there is a tremendous reserve of energy which comes in the form of either actions or words and has the desired effect of getting the work done. My 45 minutes talk was one example of that. I had not eaten anything that day because in such times hunger etc. vanishes.

At 5.30 p.m. I was the last candidate to be called for the interview. The committee asked me some basic question on solar energy, but their tone suggested that I will be selected.

So around 6 p.m. I went to Sunder Chachaji's house to tell him the day's events and after he listened to the detailed account he told me that I will be selected. From his tone it appeared that he knew much more than I did. I have therefore always considered my going to US as an act of God mediated though Sunder Chachaji. I have always remained grateful to him for changing the course of my life. Even after my return from US he helped me but then I am getting ahead of my story.

That evening I took the night train (without reservation) to Kanpur. I have never worked so hard in my life as I did for the next 10 days and finally, I was able to clear my M.Tech defense.

Getting the M. Tech certificate was another tricky matter since the babus in the IIT admissions office were as bureaucratic

as you could find anywhere. So a small treat of tea and samosas in the local IITK canteen did the trick. Those were the happy days when a small bribe of tea and snacks was sufficient to get the work done. I got my M.Tech certificate at 5 p.m. exactly 10 days after my interview and boarded the train that night for Delhi. For almost half of the journey, I had to stand in the general compartment.

I reached Shastri Bhavan next morning and gave a copy of my certificate to the clerk reminding him how I was fulfilling my promise given in my written statement. He congratulated me to which I asked what was so great about the M.Tech degree. He said he was congratulating me on getting the scholarship!

I hugged him and thanked him profusely and told him that I would like to take him out to tea, to which he replied that during duty time he cannot go out for tea!

## *Chapter 2*

# **The Preparation**

After getting the news of scholarship lot of work still needed to be done to get the passport, ticket, foreign exchange, visa, etc.

Getting a passport in 1974 was quite a big affair and took an inordinately long time since a detailed police inquiry had to be conducted. I applied to the Lucknow Passport office (since we lived in Lucknow) for it and with the help of my father's political connections got the passport in quite a short time. My case was also helped by the fact that I was a Government of India National Scholar which was quite a prestigious scholarship.

Getting foreign exchange was another matter. In those times with the precarious foreign exchange situation in India it was difficult to get it. Besides there were hardly any travel agents and thus I decided to do everything myself. It was quite a lot of work but somehow I enjoyed it because it allowed me to interact with the Government of India's (GOI) bureaucracy. At that age one is not cynical and hence I took everything in stride as it came.

The Reserve Bank of India's regional office was in Kanpur so the foreign exchange of 250 US dollars that the GOI had given me was to be purchased from Kanpur. I filled out all the forms

and deposited the necessary money. I thought that this paper work should be enough to get the foreign exchange since the official Government of India (GOI) letter was also enclosed. However after an eternity and explaining many times why I needed the exchange I was given the travelers cheques in the evening and just before the bank closing time. I had never felt so much fear in my life as I felt after getting the cheques and they were put in the innermost pocket of the under garment.

For my M.Tech I used to be paid Rs. 400 p.m. scholarship. With this scholarship I thought I lived like a king. I had two pairs of shirt and pants which were washed every Sunday and I used to see a movie in Kanpur once a month. Thus in two years of my M.Tech. I saved substantial amount so that I could pay for all the formalities of going to US like getting foreign exchange etc. In 1974 a US dollar was worth Rs. 8 and hence \$250 did not amount to too many rupees. In fact after passing B.Tech I never took any money from my parents.

To get all the paper work done for US I had to go many times to Shastri Bhavan, Delhi. I used this opportunity to really walk all over New Delhi. Delhi in 1974 was a beautiful city with hardly any traffic, broad footpaths and sidewalks and in September/October a very pleasant weather to walk. The fact that I was going to US filled me with tremendous emotions and happy feelings of how I was going to use my US education for the betterment of India.

I cannot explain why I got these emotions. I still remember many of my friends remarking at that time that I talked of nothing else but India and its future. At the age of 24 the mind is at its peak and if it gets a boost by some positive event like going to US then it knows no bounds. I felt at that time that I could do anything in the world and nothing was impossible. This joyous and exuberant state must have been noticed by others also because in any government office work etc., I seemed to charm a lot of office babus with great effect!

Thus for my air ticket I was given a letter by Shastri Bhavan for Air India. By this time I had become good friends with Mr. Sharma the same babu in Shastri Bhavan who had said that I will not get my traveling allowance (TA/DA). Since I was a part of the “system” now hence Mr. Sharma being a good GOI clerk would provide all the help. He was the point man who gave all different letters for passport, tickets, foreign exchange etc.

Air India in those times (1970s) was one of the world’s best airlines (it is really sad to see what it has become today). Their main office in Delhi used to be in Connaught Place and was huge and very crowded. Armed with the letter from the Education ministry I went to meet the manager of Air India to get my ticket.

I chatted with him quite a lot telling him about my desire and aspirations of using solar energy for betterment of India etc. etc., when on the spur of the moment he said that he will give me a ticket for helicopter ride from JFK airport to La

Guardia airport. In those times all the international flights used to land at JFK airport in New York while the US domestic flights used to originate from La Guardia airport which was about 10 miles from JFK. Normally there were shuttle buses between the two airports. At that time I had no idea what the manager was talking about but later on found out that the helicopter ticket is normally given to first class passengers. Since this was my first flight anywhere so I had no idea what was in store for me but was overjoyed to learn that besides the jumbo jet, I will also be traveling by a helicopter.

During my visits to the Shastri Bhavan, Mr. Sharma the clerk used to be very surprised by my decision to go to University of Florida. He said many times that most of the national scholars go to top schools like MIT, Stanford, Berkeley etc. “So why are you going to University of Florida? I have never heard of this university”, he used to ask. I used to explain to him that I was going to work under a world famous professor and the university name did not matter very much for Ph.D. He somehow was not convinced with this answer and said that I was making a mistake.

By the time I got my air ticket it was already middle of November and the next item on agenda was to get the US visa.

Also I was receiving regular mails from the University of Florida housing office telling me to please postpone coming in fall of 1974 since there was no campus housing available. In any case I was going in the winter quarter (starting from

January 1975) since all the formalities of Government of India scholarship could not be finalized for fall quarter. So I wrote to the housing office at UF that please book a room for me for winter quarter. This letter was extremely helpful later on.

My father being a well-known political figure in Uttar Pradesh (U.P.) politics was frequently visited by high-ranking US embassy officials. He was very close to Shri. H. N. Bahuguna who was a popular chief minister of U.P. and a strong candidate for future prime ministership of India. The US embassy staff recognized this and hence whenever they visited Lucknow they would meet my father. Besides he was a regular columnist in Hindustan - an influential Hindi daily paper published from Delhi by Hindustan Times group.

My father's editorial articles on political matters of U.P. regularly appeared in this paper and molded the opinion of important people in New Delhi. This was much before the crass commercial journalism that the present papers have come down to, so that the editorial columns of newspapers do not shape the opinions anymore.

This is what brought Mr. Peter Thompson the first secretary in US embassy to Lucknow to see my father and they became good friends. So when the time came for me to get a US visa my father phoned up Mr. Thompson in Delhi who immediately agreed to help me to get the visa work done.

On the appointed day I went to the US embassy and straight to Mr. Thompson's office. In those times it was quite easy to go to the US embassy in Chanakyapuri, New Delhi. Nowadays it is a fortress and I am told that it is very difficult to go inside it. Peter had called me a little earlier since he wanted to talk to me and at the same time the appointment was kept somewhat flexible.

I told Peter about my aspirations of learning solar energy and we discussed lots of things. Since Kennedy was one of my heroes in those days so I discussed the Kennedy clan. Peter was quite surprised by my readings other than engineering since he thought that IITians were nerds. In any case I remember discussing with him the issue of Nixon pardon and he was very emphatic that President Ford made a mistake in pardoning Nixon. I as an impassionate observer felt that some of the Americans were not forgiving and were very passionate about taking revenge. However I could see their point of view since the younger generation in those times was extremely polarized by Vietnam war which they thought was a part of Nixon legacy.

Peter, at the appointed time, took me to the Consul General's (CG) Office. I was asked to wait for a few minutes outside and I found that the gentleman sitting next to me waiting his turn was the attorney general of India. Though he had been waiting much before my arrival but because of Peter I was immediately called into the office of CG. The CG looked at my application, the I-20 of the UF and also the amount that I would be getting from the National Scholarship.



If I remember correctly there was a shortfall of about \$ 1500 or \$ 2000 per year between National Scholarship that I would get and UF demand. So he asked me how I was going to make up the difference.

I replied that the UF figures are for American students who live an affluent lifestyle, go to discos and party all the time whereas an Indian student with simple living will not require too much money for staying !

The CG glared at me angrily and I got the feeling that he would have thrown me out of his office but the situation was saved in nick of time by Peter Thompson's intervention who suggested that since all the fees are being taken care of by the Government scholarship, the living allowance should be sufficient to survive. After coming out of the office Peter told me that I should not have said what I did, so the visa was really given because of Peter Thompson.

My statement to CG was not really off the mark since I found out later on that the UF numbers were based on a student eating out in UF cafeteria which was much more costly than cooking at home. Thus I was easily able to save some amount every month even from my meager \$ 250 monthly stipend which was eventually raised to \$ 400/- within one quarter of my reaching Gainesville.

In any case getting a US visa was very difficult in those times and I wonder whether without the help of Peter Thompson I could have gotten it. I am sure the consular staff would have

insisted that the difference be made up by my family's finances and with the precarious financial situation of my family it would have been very difficult to do so. As they say when things have to happen ways are shown by the forces to be.

Peter Thompson was a very dynamic and bold man but was also slightly arrogant. His arrogance naturally came from the power of US government. After getting the visa we both went to the office of Shri. Ratan Lal Joshi the editor of daily Hindustan. Shri. Joshi was at one time a very close confidant of Mrs. Indira Gandhi and an influential figure in the New Delhi political scene. We were both invited by Shri. Joshi for lunch at his house.

Ratan Lal Joshi and my father were in jail together during the 1942 freedom movement and were very close friends. So anytime I came to Delhi I would go and meet Joshi ji. He was an intellectual and a very soft spoken person and we enjoyed talking on all sorts of issues concerning energy and Indian affairs. When I told him about my getting the US visa and how Peter Thompson was helping me in getting it, he invited both of us for lunch.

We reached Joshi ji's office around 1:30 p.m. On entering it we found that Mr. Joshi was on the phone and he kept on talking for the next half an hour. Obviously Peter Thompson got really rattled and after Joshi ji finished talking he told him that he has information that Mr. Joshi will be soon removed from editorship of Hindustan!

Mr. Joshi became extremely angry, livid and red in face and started telling Peter Thompson in raised voice that CIA agents can do anything. Peter who obviously knew what was coming could not tolerate the remarks and left without lunch. I pleaded with him to stay on but he refused to budge.

I found out later that Peter was right and Shri. Joshi ji was eased out from his editorship in next couple of months. The main reason was that Joshi ji was perceived by Mrs. Indira Gandhi to be close to Shri. H. N. Bahuguna - her archenemy and a person considered to have engineered the famous Allahabad High Court decision against her in 1975 which ultimately led to imposition of emergency in India. How Peter and US embassy knew about it at that time is a mystery to me.

I left India for US on 29th December 1974. It was my first flight anywhere and hence the excitement was too much. Not only my whole family, but friends and well-wishers came to see me off. I think about 10 to 12 people came to the airport to bid me farewell. In those times it was a big affair to see off people at the airport especially when one was going to US.

At the security point in those days they used to check the baggage physically since the x-ray checking had not been developed. Since I was taking a couple of pair of shoes the rude security person remarked that all students going to US carry only shoes! He was quite an obnoxious and rude person and broke a *pakad* (potholder) that a British couple had bought to take back home. They had bought it in Chandani

Chowk in New Delhi and it was a very useful and novel item for them. The security man did not even have the courtesy of saying sorry. Going through security and customs at the airports in India in those times was quite a harrowing experience. By contrast it is a very smooth ride nowadays. However going through the US immigration and security nowadays is quite an ordeal and sometimes a nightmare. The tables have been turned!

The British woman was distraught and almost on the verge of crying. After we sat in the bus which took us to the aircraft, I tried to console her by telling her that not all Indians are as crude and impolite as this security person was. I apologized to her on his behalf. I was a proud Indian and felt that the foreigners should always leave with a good impression about India.

When the Air India flight took off at midnight I cried. It was a strange experience for me since I always considered myself as a strong person but a tremendous love for India the motherland erupted within me. I vowed that I was going to US to learn technologies so that I could come back to use them for India's benefit. I am still amazed even today about how that feeling came but it did come with a tremendous force. There was sadness in leaving my family behind but this overwhelming emotion for India was amazing. I felt that they were pangs similar to those felt by a newly married girl during *Bidai*!

## *Chapter 3*

# **Landing in America**

The Air India flight that took me to US on the cold night of 29th December 1974 had a couple of stops. The first stop was in Kuwait for refueling. The flight then went to London and finally to New York.

Due to the excitement of my first flight and also the fact that I was going to US, I could not sleep at all in the plane. Even today, after traveling maybe millions of miles in planes, it is nearly impossible for me to sleep on them. So when I was not looking outside the window I chatted with my fellow passengers and the air hostesses.

An Indian professor who taught in some US university befriended me. He was an elderly gentleman but we chatted quite a lot. Just before reaching London he asked me whether I was taking any liquor for anybody in US. I said no so he asked me whether I could take an extra bottle for him. In those times every passenger was allowed to import only one bottle of liquor in to US so getting an extra bottle was a good deal. At the London airport he bought two bottles of Chivas Regal at the duty free shop of which one bottle I had to carry past the US customs in New York. Then I realized why he was so friendly to me. In any case this allowed me to see the dazzling display of duty free shops in London Airport and

also found out that Chivas Regal is a prized whiskey and a good present for somebody who drinks.

While approaching London airport strange thoughts came to my mind regarding our old history of colonial rule by British and how they had raped and plundered India. These thoughts never came later on when I traveled many times to London but the first visit brought them as if they were a part of greater consciousness of India and I was an integral part of it.

My Air India flight was to New York's John F. Kennedy (JFK) international airport and from La Guardia airport I had a domestic flight on Eastern Airlines next day to Gainesville, Florida.

I was a fast learner and so learned quite easily how others behaved and tried copying them. Thus I had no difficulty at the immigration or customs in New York though this was my first visit.

Just before landing at JFK in New York, I had befriended another Indian professor who was a thorough gentleman and felt very happy that a new Indian student was coming to US. He told me never to go back to India since US was a land of opportunity and offered a great future. He also sensed my apprehension regarding immigration and customs and getting my flight for the next day. Hence he told me how to behave with the customs and immigration officials. Since he was also traveling by the helicopter service to La Guardia he

helped me take the shuttle and showed me all the landmarks of New York as we flew from JFK to La Guardia. It was a fantastic sight to see so much brightness at night and even today when I think about that journey it brings back wonderful memories of that amazing sight.

When we reached La Guardia airport the gentleman professor (whose name I cannot recollect now) asked me where I was staying during night. I told him I had no place to go to at which he was very surprised. He told me that loitering in the airports is strictly forbidden and if the cop or police finds out about it then he will force me to leave the airport. In any case the professor found out that till midnight or early morning there will be flights to and from La Guardia so if I just show that I am waiting for some flight I will be all right.

He also helped me by putting my only suitcase in the airport locker and gave me the key. In those times the lockers at airport required 2 quarters and he give me 2 more quarters in case I needed my bag and wanted to put it back again. He assured me that everything will be alright and left his visiting card with me. It was a wonderful and a warm welcome that I felt because of the generosity of this Indian professor.

I had reached La Guardia at 8:30 p.m. and my flight to Gainesville was at 7 a.m. next day. So there was nothing else to do but to see America as it passed by in La Guardia airport.

From lack of sleep, excitement and probably the excellent and rich food in Air India flight I got slight indigestion. So a couple of times I went to the restroom. This was the first time I was using the European toilet and not being used to them I squatted on it. The American toilet doors are open from below and hence anybody can see the legs of a person inside. So whenever anybody came to the toilet, I would get down and this program continued for sometime.

After I came out of the toilet, I washed my hands and as per my usual habit I took out the handkerchief from my pocket to wipe them. A black passenger who was standing at the next wash basin washing his hands, immediately said "Man take the paper it is free"! I laughed at his remarks because he thought that a poor Indian might be afraid of taking the paper towel thinking it might cost money! We chatted for a while and then I requested him to have coffee with me. So my 50 cents that the Indian professor had given me were used up.

The scene at La Guardia airport was amazing. It was New Year's Eve so it was quite crowded. I saw for the first time the openness in American society where they would do anything in public. Thus some couples were kissing really passionately and except for actually making love they did everything openly. For a young man coming from a prudish and conservative society like India this was quite a revelation.



In those times La Guardia had sofas in the waiting halls. So I found a sofa close to where my luggage was stored and tried to lie down on it. Since the Indian professor had warned me not to sleep, I kept an eye for an occasional cop. Anytime I saw a cop I would get up, sit and pretend to read and when he went away again lied down. This is how I passed the night.

By the time morning came I must have slept for not more than one hour or so and thought that on reaching Gainesville I will sleep. I had no idea where I will be staying or how will I reach the dorm that I had asked for. These things I thought will somehow be taken care of when I reach Gainesville. I also thought that if the higher forces have allowed me to come so far they will also show me the way.

In the morning after freshening up I went to collect my luggage from the locker and was quite happy to see that it was still there! Coming from a country like India where one is always afraid of thefts in lockers it was a new experience that it was intact.

The flight from New York to Gainesville was by a small jet plane of Eastern Airlines. I again asked for the window seat so that I could see how US appeared from the sky. I befriended my fellow passenger. He was a Chinese student doing his Ph.D. in electrical engineering. So I must have asked him millions of question regarding University of Florida. He assured me that electrical engineering was very good but was non committal about mechanical engineering. When I

asked him about Dr. Erich Farber he said that he had not heard of him. My heart sank and I wondered whether I had made a mistake of coming to UF.

As we approached Gainesville, I looked out and did not see anything except trees. We landed on a non-descript airport which was even smaller than the Lucknow airport and in those times Indian airports were a laughing matter. The porter brought out our luggage from the plane in a hand trolley and told us that we should pick it up ourselves from it.

In early 1970s Gainesville was a small university town with student population of about 28,000 and the total population of about 130,000. There was hardly any industry and very little commerce except what the university community generated. This was the reason for a very small airport and very few flights per day. In contrast today Gainesville has become a fairly large town with student population of nearly 46,000 and huge shopping malls and large housing complexes dotting the city. Besides it is consistently rated as one of the best cities in US to live in.

At the airport gate an elderly gentleman and his wife greeted me. I guess I was the only Indian on the plane so he recognized me immediately. The elderly gentleman was a retired University of Florida professor in nuclear engineering and he and his wife had volunteered to pick me up at the airport. Long ago I had written to the International student office that I did not know anybody at UF and if somebody could pick me up from the airport then it would be appreciated.

Hence it was very sweet of them to come to the airport on New Year's eve.

The first thing the professor told me was that I probably needed some good sleep. He must have figured that out from my blood shot eyes and disheveled appearance. He enquired about where I would be staying and when I told him that I have not heard anything from the UF housing he drove me straight to the International student office.

The day was 31<sup>st</sup> December 1974 which was a Tuesday. So there was not a soul in the university since it was Christmas vacation. Still the head of the International student office Ann Corbin - a very charming lady was there probably waiting for my arrival. She was very helpful and phoned a couple of Indian students. But being a holiday season nobody was around. After many tries she located an Indian student who had come from out of town and was staying as a guest in one of the apartments. Ann thought that either on 1<sup>st</sup> or 2<sup>nd</sup> January, I should be able to go to the housing office and find out about my staying arrangement hence I could stay for a day or two in that apartment.

So the professor and his wife deposited me around noon at this apartment which was about three miles from the University. The Indian visitor greeted me and after a quick hello I immediately took bath and almost broke my bones by slipping in the bath tub but luckily nothing happened. After taking bath and freshening up, the Indian student and I went to the nearest place to eat. I was really hungry since I had not

eaten in the last 10-12 hours because I did not want to spend money on food at the N.Y. airport.

Though I was hungry and quite sleepy still the first impression I had when I walked from the apartment to a nearby restaurant was of tremendous silence. It was a holiday season and hence there were fewer cars on the road but none of the cars honked and there was very little noise otherwise. This was a tremendous contrast to my surroundings in Lucknow and Delhi where the noise pollution was quite heavy and where nowadays it has become a major epidemic.

We went to Steak and Shake which offered mostly beef and chili and this was my first meal in US. For an almost vegetarian from India this was a strange introduction to America. After that I came to the apartment and slept. This was about 1 or 2 p.m. and when I woke up at 11:30 p.m. I heard strange noises coming from the living room. The owner of the apartment, an Indian graduate student, had returned from his vacation and was watching American football on his T.V. I introduced myself but was surprised by the lack of interest this Indian student had in me. He had been in Gainesville for almost 4 years and had very little interest in anything Indian. As a matter of fact he told me that I should look for another place to live since other roommates of his were coming next day. Since I was still feeling groggy I went back to sleep and woke up in the morning feeling quite fresh.

In the morning the other roommates (all Indian students) came and the one in whose room I had slept told me bluntly

that I had to move out. He suggested that I should look at the advertisements in the local paper Gainesville Sun and then call the phone numbers given in them. I called one number and the voice at the other end could not understand my English so I realized very fast that hunting for apartment this way would be a futile exercise.

By this time I had found out that one of my IIT Kanpur classmates Udai Pratap Singh was living and working in Gainesville. Udai and I hardly knew each other in IITK and just had a passing acquaintance. But in this foreign land both of us met like long lost friends. He immediately told me to move in with him in his apartment till I found a place. However I thought it might be better to first find out what the status of my campus housing was.

So next morning I went to the housing office on the university campus. The office was about 2-3 miles from the apartment and since it was winter and a very pleasant weather I walked to it. I was therefore very surprised that every 2 or 3 minutes a motorist would stop and ask me if I needed a ride. I was really touched by their generosity and thanked them. In those times walking in US was quite a rarity and most of the times people either rode a bicycle or drove a car. Gainesville had a nearly non-existent bus system and so it was difficult to get around the town. I enjoyed walking and loved the green surroundings. The present US is a very different place and if you are walking nobody will ever ask you if you need a ride.

On reaching the housing office I asked the lady at the counter whether I could get an accommodation on the campus. She said everything was full and could help only if she had received a request before hand. I told her that sometime in September I had sent a letter and I was not sure whether it had been received since I never got a reply. She went back into the records office and fished out my letter and said that yes housing would be available to me in the Beaty Towers. I was so thrilled by this news that I almost hugged the lady.

Beaty Towers which was next to housing office was for graduate students and the costliest dorms on the campus. If I remember correctly it was \$ 175 per quarter and I had little more than \$ 200 with me. Besides I had to pay 100% advance and did not know when I would get my monthly stipend from the Indian embassy since all the cheques came from there.

However the rude welcome that I had received from the Indian students in the apartment where I had spent the first two nights made me take the decision immediately and I took admission in the Beaty Towers. My friend Udai told me that till I got my cheque from the Indian embassy he would loan me money for the groceries and other things. So that evening after Udai came back from his office I got my luggage from the apartment and moved into Beaty Towers.

Beaty Towers apartments were cramped but a luxurious place to live. Each apartment which was centrally air-conditioned had 2 rooms, a dinning/kitchen area and an attached bath-

room. These apartments were meant for 2 students with one in each room, but because of shortage of space it housed 4 students, 2 in each room. Since it had a modern kitchen and a refrigerator, I had to buy some utensils to cook. The rest I borrowed from my roommates later on.

Since it was still the holiday season, I was the first to arrive in my apartment and did not know who my roommates were. At around 12 midnight I was woken up by this hunk of a man who was very tall and spoke with a thick European accent. I was still too sleepy and so said good night to him and went back to sleep. Next morning I found out that my new roommate was a Romanian graduate student in Chemistry and that his father was the second in command to the President of Romania.

We became very good friends and he felt a certain kinship to me since he loved Raj Kapoor movies and I was a foreigner. He hated America. To him any day a foreign roommate was desirable to an American. I used to argue with him that if he did not like US then why he was staying in that country to which he could never give any satisfactory reply. I found this tendency in quite a few foreign students I encountered during my stay in US. They all criticized US but never wanted to leave it.

The Romanian roommate used to be visited occasionally by dark suited characters who seemed to be KGB - type operators. They brought crates full of Vodka since he used to drink heavily. Whenever I broached the subject of his visitors he

would simply ignore my questions. I lost touch with him when I moved to Reid Coop in the next quarter. However I was told that he had abruptly left UF without a forwarding address.

Next morning I went with tremendous eagerness to my department. This was my first day on a US university campus. The winter quarter had started and so there was quite a lot of activity and crowds at the campus. Everything was new and unique to me and so I soaked up as much experience and sights as possible.

I reached the department office, finished the paper work and then went to see my professor Dr. Erich Farber. I was really touched by the extreme politeness and helpfulness of the Mechanical Engineering office staff. In fact US of 1970s was a very polite and gracious society. Some of the rudeness that has crept in now came much later on.

I was told that Dr. Farber will come later on in the day. So I waited and when he came I went to his office and introduced myself. I asked him whether he had received my letter regarding my coming to work under him to which he replied that he got 200 letters every day so was not sure which one was mine ! This was my first brush with his arrogance and I had many opportunities to experience it later on during my UF stay.



## *Chapter 4*

# Campus life

I easily and quickly settled into the campus life. Coming from India, everything in US appeared to be so easy and good and quality of life so superior that surprisingly enough I did not feel homesick at all. In fact the situation at campus helped me feel very much at home! 1974-75 were worst times in UF history with massive power cuts during weekends, low thermostat settings in winter and great deficit in the general budget. Thus during weekends there used to be no power in the department and as the Gainesville temperature started going up all the windows of offices were opened and we had to use a hand fan to keep cool. It was just like India! Fortunately the situation improved in the spring quarter of 1975.

As I settled into my course work a great desire arose to learn as much as possible in all fields. It could be because of good teachers, excellent library facilities or a general ambience of scholarship. This was further helped by the fact that UF being a major university had almost all departments on the same campus. This was very conducive to study multi-disciplinary areas.

Thus I started attending seminars in different departments. In those times there was no internet or fax so I had to go to different departments and get my name registered to receive

seminar notices or fliers. On receiving them I would go and attend the seminars. Not only was I interested in solar energy or mechanical engineering but also took courses in materials science, chemical engineering, electrical engineering, and even in humanities subjects like movie appreciation, sleep and dreams etc.

I also did very well in my courses and mostly scored A's or B+'s. I remember in one course the professor gave me 150 out of 100 since I solved the extra problem which nobody could solve. I was not a genius or brilliant but just a hard worker. So when the problem was given, I went to the library, did good research and found the solution in one of the papers in a Journal which I then applied judiciously. My solution was displayed on the notice board for others to see. Such instances happened a couple of times in other courses also.

This was also the time when electronic revolution was just being ushered in university campuses. One of my officemates bought a Hewlett Packard scientific calculator for \$850/- ! He used to guard it with his life because it was one of the first such calculators in campus besides being very costly. Hence he used to carry it all the time attached to his belt. With great difficulty he would allow me to use it for short periods of time. I was used to slide rule but found the calculator very handy and useful. In a matter of a year the prices of these calculators had come down to about \$70-80. Today the same calculators will not cost more than \$5!

There used to be a great debate in our department regarding the merits of calculators vs. slide rules. All the old professors felt that the engineers would lose their feeling for design and numbers by the use of these calculators. Within few months these same professors had started using them since they were very useful. I witnessed a similar debate in early 1980s when the personal computers started appearing on the campus. The old professors complained that besides research now they would have to become secretaries also! Nevertheless in a short time they all had learned typing and found these machines very useful and handy.

UF being one of the good universities of US had a large number of famous people coming to give lectures, seminars and talks and I enjoyed attending them as often as possible. I have always found out that a student has to extract as much knowledge as possible from the university education and that the university does not give it to him or her on a platter. Thus if I had a query I would go and meet the professors and discuss with him or her the issues. These meetings proved to be very useful later on when I set up the University wide multidisciplinary seminars on energy.

This thirst for knowledge made my graduate studies very enjoyable and I used to spend long hours till late at night either in my office or in the library. I remember that even during week-ends I would go after dinner to my office and work till it was quite late.

A black cleaning woman who used to clean our office had been observing my behavior. So one day she came to my office and said in her black English “Are you having fuuun”! I said “Yes, I enjoy my studies and hence I come to the office every night”. She said, “Do you need any heelllp”! I immediately understood her drift and so started going to the library at night instead of staying in the office! In those days lots of Indian students were considered as soul brothers by the blacks and so the cleaning woman felt a certain empathy for me.

Quite a number of Indian students during weekends used to frequent bars and other night spots for female companionship, but I somehow found them quite distasteful. It was a combination of my snooty outlook where I always thought that people who frequent bars were lower forms of life or it could also be because of my shyness and lack of knowledge of dancing. I did go a few times to the local bars with my Indian friends but found the music too loud and environment too suffocating.

After the first quarter I moved into one of the cheapest dorms on the campus called Reid Coop. I shared a room with another Indian graduate student. The living was very sparse with the room containing a bed with mattress, one table and a chair. There was no air conditioning and all the residents of one floor shared a common bathroom, kitchen and dining room. The best part was the rent which was only \$ 25/month or less than half that of Beaty Towers. Majority of the students who stayed in Reid Coop were foreign graduate

students from India, China, Pakistan etc. There were also a good number of American students both graduate and undergraduate. Besides each one had to take turns in cleaning the kitchen, bathrooms and hallway. This is how the low dorm fees resulted.

I used to share the groceries with my roommate and another Indian graduate student who also lived on the same floor. The third student had the car and so once a week we all used to go for grocery shopping. Both my grocery mates drank a lot of beer which I did not but since the grocery bill was equally divided, I paid for the beer also. This went on for about 1-2 months and I thought that they would be sensitive enough not to ask me to pay for their beer. Finally when I protested, they said that it was also my beer and I was most welcome to drink as much as I want. I told them that I have no desire of drinking it, so they made a plan of making me aware of the good qualities of beer.

That weekend three of us went to a local beer bar and I drank about 2 liters of beer in one sitting. After the dinner and beer drinking, I could neither stand up nor talk coherently. So my roommates brought me back to my room and I slept in the drunken state. In the morning I woke up with a slight hang-over and my roommate remarked that beer must have helped me sleep well. Since I had no problem sleeping, that was the last time I drank beer. I could never develop a taste for beer or any other hard drink though I tried all of them and so I became a teetotaler by choice. In fact it used to be quite hilarious later on when I and my wife were invited to lots of

parties and we were one of the few couples who remained sober after a couple of hours ! I did however develop a taste for wine but with time that also vanished.

Gainesville in those times had a very few good eating places. Thus for good Chinese food we would drive to Jacksonville a good 100 miles to eat dinner! When I wrote about it to my parents they thought I and my friends were crazy to drive 100 miles just to eat Chinese food. But that was America where one did not bat an eyelid to drive 50-100 miles either to see a movie in an open air theater or eat dinner. In fact I once drove 400 miles from Gainesville to New Orleans just to see the exhibition about the famous Egyptian Prince Tutankhamen which was touring US in 1977.

Fairly soon I got quite a liking for the American food (one is not sure what exactly it is) and hence did not miss very much the Indian food till one day (3-4 months after my arrival in US) I dreamt of *parathas*! I woke up and felt really ashamed to dream of such a mundane thing as *parathas*. But then realized that the unconscious is telling me something. So I requested one of my married Indian friends to feed me a *paratha* meal. I think that quenched the desire!

When I came to US I did not know any cooking. So cooking simple things like scrambled eggs or omelette became quite an exercise. However I applied my mind and learned to cook them quite well later on. Cooking a typical Indian meal was something else. In my first month of stay in Beaty Towers my Romanian roommate insisted that I should cook an

Indian meal for him. After a great difficulty I cooked some *pulao*. Somehow red chilies were put in little more abundance with the result the poor roommate had a tissue paper in one hand and a fork in other hand! After that fiasco I did not cook very much in my Beaty Towers apartment and so learned most of my Indian cooking from my Reid Coop roommates.

A similar fiasco took place in the laundry in Beaty Towers. I washed my woolen sweater that my mother had lovingly knitted in the washing machine and then put it in the dryer. The sweater shrank to one fourth its original size! I never had the heart to tell my mother what happened to it. When my parents came to visit us in Gainesville in 1978 then I showed her the sweater.

The difference in quality of life between India and US in mid - 1970s was enormous. The huge shopping malls, broad roads, highways, traveling by luxurious cars etc. was a heady fare for a student coming from a socialist country like India where getting a refrigerator required booking for it and 10 years' wait. Similarly for cars or even scooters one had to book in advance and could only get them after 10-12 years. I remember my brother who was an orthopedics surgeon getting his Bajaj scooter in 1975 through Chief Minister Shri. H.N. Bahuguna's quota. It was a strange India. So the lure of a good US life was too much for an Indian student.

Since I was in Florida it was but natural that I should go and see Disney World at the first available opportunity. This was

the main Florida attraction located in Orlando which was about 120 miles from Gainesville. My American officemate offered to take me to Disney world on one long weekend in February 1975. So he and his wife drove me in their car to Orlando where we not only saw Disney world but stayed in a hotel for couple of days to see other nearby attractions also.

Visiting Disney world was like a fairy tale and it transported you to a different world. I realized then that one could easily get used to the American lifestyle. Whether it was because of the weather (very crisp beautiful February day) or the famous rock band playing in cool evening or just the general ambience of the Magic Kingdom I am not sure but it was a really wonderful experience. I could see how such things can really attract visitors from anywhere in the world. Being in Gainesville I went many times to Disney world later on because any guest to our apartment wanted to see it. But I never got the same feeling that I had the first time.

Disney world was also the attraction that brought a lot of Indian embassy officials to UF campus. In those times they used to make an excuse of going and visiting Indian students at UF to solve their problems but the main agenda was to get traveling allowance (TA/DA) for their visit to the Magic Kingdom. Being a Government of India national scholar and later on President of India association I had to arrange on short notice quite a number of times a get together of Indian students and visiting embassy officials.



I remember one such amusing incident during the time of emergency sometime in late 1975. I arranged a meeting of Indian students and Indian faculty at UF with a high ranking Indian Embassy official. He had come basically to see Disney world, but his "official" visit was to sensitize the Indian students and faculty to the good effects of emergency! So he started the meeting by telling us how trains were running on time and the people came to their offices on time etc. etc.!

An Indian female student who was quite vocal, attractive and a firebrand leftist simply lit into this official. She used the choicest abuses in Hindi against Indira Gandhi and also directed them to the embassy official since he was the representative of "That evil woman". I just could not control my laughter at the discomfort the embassy official and some of the Indian UF faculty felt. The UF faculty wanted to curry some favors with embassy official and hence they felt that I was instrumental in insulting our guest. No amount of my explanation that this was a free country and we were citizens of free India and so anybody had the right to say anything, cut any ice with them.

The embassy official who should have been the one complaining to me about the whole episode was totally unperturbed because his main aim was to see the Disney world ! On top of that he enquired about who that attractive young lady was!

Learning to drive and owning a car was another craze of most Indian students in US. In my case somehow I never got that craze but got a car out of necessity. My grocery mate who had a car was leaving for India and so I and my roommate realized that we would be without a transport. In those days the bus service in Gainesville was nearly non existent hence I decided to learn driving. I also decided to buy the car from the grocery mate for \$ 200/-. It was an old Ford Falcon which was a gas guzzler but in good running condition.

My grocery mate was amazed when I learned to drive in about 15 minutes of his training. So after one month of drive runs with special emphasis on parallel parking I decided to give the driving test. Two other Indian students also went with me in the Ford to the Florida Transport office to give the test.

My number for taking the test came last. The driving inspector sat next to me and I started the car. She immediately told me to stop it and flunked me. I had put the car in gear without releasing the hand brake! I was livid and complained loudly to the Indian student of why he had put the brake. He obviously shot back in anger stating that he also flunked the test because he did not put the brake at the end of the test! After flunking him the inspector told him to put the hand brake so the car will be ready for my test drive. In any case both of us again took the test after 15 days and passed with ease.

In those times it was very easy to get a cheap second hand car and thus \$ 200 Ford served me for almost two years after which I sold it again for \$ 200 and bought a smaller and more fuel efficient Toyota Corolla (again second hand) for \$ 600.

In fact buying a second hand car was one of the first purchases of quite a number of Indian students (my first purchase was SLR camera). Since the gas was cheap and priced at 70-80 cents/gallon this was really a great way to see America. One of my Indian friends at UF was from Chennai (then Madras). He was very dark and as per the fashion of those times sported long hair. He had bought a second hand Volkswagen Beetle a small car and he and his friends went touring the south. In one of the towns of Alabama they were caught speeding. So after the cop gave him the ticket he remarked, "And another thing I don't like is a nigger with long hair. Go get a haircut"!

University of Florida in 1970s was a very liberal campus. It was voted by one of the US magazines as second most liberal campus after Berkeley. It was also voted as the party school by Playboy Magazine in middle of 1970s. Besides, it was the post-Vietnam era when the sexual revolution was at its height in US.

In my first quarter when I was staying in Beaty Towers I saw this liberal attitude first hand. My Romanian roommate had invited me to a party in one of his friend's apartment. He had also invited some of his professors, their wives and his departmental secretaries. This was not a dance or song party

but just a get together of his friends whom I was meeting for the first time. He went early in the afternoon to make the necessary arrangements and I went late in the evening. Just before I left for the party my American roommate offered me a condom! I was aghast but he insisted that such items are necessary and useful in parties.

Another incident of similar nature took place when I was staying in Reid Coop. One day I came back to my dorm around 6:30 or 7:00 p.m. to cook my dinner. When I went into the kitchen I saw around 10-20 of my floor residents standing in the balcony and cheering a striptease show taking place in the women's dorm just across the Reid Coop. This had been going on for quite some time and the lady enjoyed entertaining the boys in our Coop ! I had never seen it earlier because I used to come early around 5 or 5:30 p.m. and leave for my office around 7 p.m. In those times streaking (or students running naked) was also a common sight during football games, open air concerts or just about anywhere in public on the campus.

Similarly there was an American student who lived on my floor in Reid Coop and was very well endowed. So every day in the morning he used to walk naked to the common shower and then walk back naked after his bath to his room which was at the end of the hall. Quite a number of times female students from other dorms came to our dorm to visit their boyfriends and they enjoyed this spectacle. Though there were visitation hours in the dorms for visitors of opposite sex, they were hardly followed. Similarly there were sepa-

rate dorms for men and women, but there was a lot of mating which went on in these dorms in those times. The American morals were really breaking down !

Halloween celebration on the campus was an extremely raunchy affair with whole scale debauchery, and alcohol and drugs like marijuana were used very liberally. The main event took place in the center of University in Plaza of Americas a big open space between main library and Century Towers. It was really a carnival like atmosphere with loud music, frenzied dancing and obscene floats taken around. All these hedonistic activities were stopped later on by university authorities in late 1970s. Similarly it was a strange sight for students and visitors to see belly dancing taking place in the corridors of student union during lunch break. Initially the sight of the semi naked women gyrating was really shocking, but with time I got blasé about seeing the flesh.

There used to be regular open air concerts by Dave Brubeck and his famous jazz band on the lawns of the University near Mechanical Engineering department. The whole atmosphere used to be pervaded by a strong smell of marijuana. UF campus being very liberal in those times allowed lots of such activities. As US became more conservative in the 1980s all these activities eventually stopped.

Nevertheless this was also the time of increased usage of heavy drugs and Florida became the conduit of these drugs from Latin America to mainland US. Thus there were large scale thefts of electronic precision balances from the labs on

the campus since the drug dealers used them to weigh the drugs.

Stealing was a major problem on campus. Couple of times my office was broken into (both on and off campus one) and I lost quite a few things like calculators, watches and other office supplies. Even on the campus there used to be large number of thefts of bicycles. So if you locked the front wheel the back wheel was gone or if you locked both the wheels the frame was stolen. It was very difficult to understand why such thefts took place in a rich society.



Anil in front of Beaty Towers,  
March 1975



Anil in his room in Reid Coop dorm,  
March 1975



Anil in Disney world,  
April 1975



The four who criss crossed Eastern USA,  
Alok Krishen is on the far left, May 1975



Nandini with her roommate Carol Gnanon  
in Beaty Towers, 1976



Nandini doing her experiments on peanuts in  
greenhouse, 1976

## *Chapter 5*

# **Brush with Greatness**

My first brush with greatness at UF was with Jimmy Carter who became the American President in 1976.

One day in later part of January 1975 I was coming back in the evening to my office from Beaty Towers when I saw posters all over the campus announcing that Jimmy Carter the Democratic presidential candidate will speak at 8 p.m. in the McCarty Auditorium.

I normally used to go to my dorm around 5 or 5:30 p.m. to cook and after dinner would usually come back to my office in the department to study or do experiments in the lab till about 12 or 12:30 a.m. The quiet atmosphere of the office at night was excellent to study.

Hence when I saw those posters in the evening I thought it might be worthwhile to go and see what a potential President of US is all about. Coming from a political family I was curious about the politics in US and the talk by Jimmy Carter provided an excellent opportunity to find out more.

Thus I went a little early to the auditorium and sat in an aisle seat near the back so that if I got bored I could leave the talk without disturbing other people.



At exactly 8.00 p.m. Jimmy Carter entered the auditorium from the back smiling his toothy smile and shaking hands with the audience as he passed by. He shook hands with me and casually asked where I was from to which I replied India and he moved on.

His thick southern accent was difficult to follow but his smiling face and charming and gracious manners captivated me and so I sat through his speech. After the lecture came the question/answer time. A black woman got up and literally lit up into Jimmy Carter accusing him of racism since he came from the South and calling him names etc. Throughout this question Jimmy Carter simply kept on smiling and answered the question without any rancor or irritation. He never appeared to be perturbed or rattled at all. I was extremely impressed by his demeanor and behavior.

So I came back to my office around 9:30 p.m. and told my officemates that I just saw the next President of US. One of my officemates got livid and told me that I had been in US for only a month and how dare could I pass judgment on the political candidates. "The next President will be Ronald Reagan" he told me. I had no idea who Reagan was but somehow my gut feeling told me that Jimmy Carter may become the next President. I became so interested in his campaign that I used to read everything on him that came in the newspapers.

So I used to go to the main library on UF campus and read editorials in New York Times, Washington Post, Miami

Herald etc. and became quite knowledgeable about Jimmy Carter and his policies. I was delighted when he became the President and I still feel that he was the most decent President that US has had in the last 50-60 years. I used to debate with my American friends and officemates regarding the pros and cons of Carter candidacy and they were amazed at my knowledge. That is when I felt that Americans had become quite illiterate since they hardly read the papers and formed their opinion only from news bites on TV. My crowning glory came when I persuaded successfully my officemate to vote for Jimmy Carter in 1976 Presidential election!

Another great man I met at UF was Vernher Von Braun. He was the father of US space program and a genius rocket expert who designed and developed the V-2 rocket for Nazi Germany and later on came to US after the Second World War. He set the tone for NASA and was its deputy administrator and chief designer of rockets.

Dr. Von Braun and my professor Dr. Erich Farber were good friends. Both were of German-origin and since Farber also played an important role in the design of Saturn 5 rocket, they knew each other quite well. On 15 July 1975 the first US-USSR space docking took place. It was a great achievement in terms of the peaceful space cooperation between two super powers. Dr. Von Braun came to UF to meet Dr. Farber so that both of them could go and see the launch of the US spacecraft from Kennedy Space Center near Cape Canaveral. Naturally they were VIPs so saw the launch from a close

range. I also went to see the launch later that day but saw it from 15 miles away !

Thus Dr. Farber introduced me as his star student to Dr. Von Braun. I could only chat with him for 5-10 minutes since both of them were in a hurry to go to Kennedy Space Center. He seemed a very nice and simple man and we had a very pleasant conversation. He told me that I was very fortunate to study with a world-renowned Solar Energy expert.

Stanley Ulam was another great name at UF. He was a Distinguished Professor of Mathematics at UF and was an extremely humble person. He kept a low profile and very few students knew that such a great figure was at UF. He was the true father of the Hydrogen Bomb. This title was usurped by Dr. Edward Teller who was quite an obnoxious person and took most of the credit himself. But it was Dr. Ulam's paper in early 1950s which clearly showed the possibility of a hydrogen bomb and how it could be built. Later on I heard Dr. Teller at UF and in his lecture he appeared very arrogant and pompous. After the talk Dr. Teller had a long meeting with Dr. Farber on solar energy and next day Farber told me how Teller tried to show that he knew much more than him!

I forget exactly how I came to know Dr. Ulam, but he enjoyed Indian philosophy and we did discuss a couple of times some issues in Indian philosophy. Dr. Ulam was one of the few persons in whose presence I felt extremely humble and had a feeling of well being. He used to give excellent seminars and loved to tell wonderful stories of his interactions

with brilliant scientists both at MIT where he was a professor and at Las Alamos where he was one of the key scientists in the Atom Bomb Manhattan project.

Another great mathematician at UF was Vasile M. Popov. He was very soft spoken and a thorough gentleman. He had a stability criterion named after him. I took an advanced mathematics course under him called stability theory. It was a very deep course and I was the only mechanical engineering student in it. All others were students and faculty from mathematics department. I was extremely interested in mathematics and it was my favorite subject. Dr. Popov's course was a logical step after a good number of courses in mathematics that I had taken at UF. Dr. Farber once told me that if I took one more mathematics course, then I would have to shift to Mathematics department from Mechanical Engineering!

Dr. Popov had just joined UF as a distinguished professor in 1975 and this was the first time he was teaching this course at UF. I had difficulty in understanding the deep mathematics and so worked very hard on his lectures and used to go to the library to read extra material. Near the middle of the quarter we enquired from Dr. Popov when the midterm examination would be held at which he quietly told us that there will be no examination in his course and the fact that we were attending it regularly was enough proof that we are interested in knowledge. So all of us got an A grade!

There were other well known names at UF during my time. For example Prof. K. Polhauhsen a distinguished Professor in Engineering Sciences Department was one of the pioneers of fluid mechanics with L. Prandtl and H. Von Karman. He was an extremely old man and I saw him a number of times standing on the bus stand to catch the bus. A person like that in India would have been a national hero chauffeured in a car. Yet in US he was another professor with no special treatment. This fact had a tremendous impression on my young mind. Some of my friends who were in Engineering Sciences department used to speak often about him.

Two other great names with whom I interacted briefly were Peter Lowdin and Howard T. Odum.

Peter Lowdin was a Distinguished Research Professor in Chemistry Department. He was a theoretician and a well-known figure in Quantum Chemistry. I came to know about him from my Indian roommate who was doing his Ph.D. in Quantum Chemistry and Lowdin was one of his committee members. Peter Lowdin had joint appointments at University of Uppsala in Sweden and University of Florida. So he used to spend winters in Florida and summers in Sweden. In fact there were quite a number of big names in academia who came to UF because of the weather. They had done their major work in other well-known universities and when nearing retirement they would take an appointment (and sometimes joint appointment) at UF. Peter Lowdin was also a member of the Noble Prize Committee.

I once invited him for the multidisciplinary seminars on Energy that I used to hold in Mechanical Engineering during 1978/79. I was still a graduate student at that time. These university wide seminars had become quite well known and popular and there were a couple of stories written on them in the local newspapers. Thus quite a number of UF faculty used to look forward to an invitation to talk in these seminars. I think it was a remarkable event that a graduate student was allowed to run these seminars and the department gave all the help. Such a thing would be unheard of on Indian University campuses. After the seminar series ended in spring 1979 the chairman of Mechanical Engineering gave a glowing commendation letter to me stating that I as a graduate student could do what his faculty could not accomplish!

These seminars were the outcome of my conviction that nature knows best and that we should learn from it and copy it. This is now known as biomimicry but in those times this field was not so well explored. Thus I used to invite professors and faculty members from different disciplines including engineering, agriculture, entomology, medicine, physics, chemistry etc. to talk on energy. The seminars were held every Thursday in Mechanical Engineering auditorium and the series was spread over three quarters.

I had invited Peter Lowdin to talk on second Law of Thermodynamics and Energy problem. Before the seminar I would go to the concerned faculty member and discuss what he or she would talk on. I would request all of them to talk

on how they saw a solution of the energy crisis through their work.

Since this was a popular seminar series and also due to the stature of Peter Lowdin the Mechanical Engineering auditorium which seated 250 people was jam packed. Out of the allotted 50 minutes Dr. Lowdin spoke for 45 minutes on an obscure theorem that he was working on in non-equilibrium thermodynamics and the last 5 minutes on the 2<sup>nd</sup> law and energy! By the time he finished there were only a handful of persons left in the audience. It was one of the most boring seminars in the series. Thus a well known name does not guarantee that he or she would also be a good speaker. In fact I have found quite a number of times that some very well known researchers are extremely poor teachers and speakers.

H.T. Odum on the other hand was a different fare. He was a good teacher and gave interesting and lucid talks. Dr. Odum was also a distinguished professor in Environmental Engineering and a pioneer in using systems theory in ecology. He had won many international awards and had set up a well-known center of wetlands at UF. He was tall and bulky, with a very prominent nose, but extremely soft spoken. I invited Dr. Odum to give a talk in the energy seminar series.

Dr. Odum gave a couple of talks on energy systems and public policy and the last talk he gave before I left UF for India was on the energy of soul! A lot of people thought that he had gone wonky but I thought that he had the guts and the

courage to talk on a subject that he felt was interesting. To my mind the whole basis of scholarship is to conduct research on and talk on subjects which one finds interesting and in those times US educational environment encouraged such ideas.

A regular visitor to UF campus was Dr. Manfred Eigen – a Nobel laureate in Chemistry and the Director of Max Planck Institute in Germany. He used to come yearly to UF and gave a series of lectures on evolution and second law of thermodynamics. I attended these lectures which normally had 15-20 persons in the audience. Dr. Eigen was a great speaker, taught a very difficult subject with great ease and made it understandable. He was a handsome man and was always accompanied by very attractive female assistants which was an added attraction to attend his lectures.

Besides these there was a regular flow of outstanding educators, academicians and well known figures whose lectures I attended on all different subjects ranging from out of body experiences to particle physics to cosmology etc. This aspect of UF campus life I have always missed after coming back to India. Every good university in US has a large number of such intellectual interactions and it is upto the students to partake of and learn from them. I often found that very few students that I knew had the breadth of interest to take advantage of the rich intellectual life that UF offered.



## *Chapter 6*

# **India Association**

In 1975 there were about 40 Indian students and half a dozen Indian faculty members at UF. Thus the Indian community was small and there was an Indian student association but it was nearly defunct and non-functional. During some of the Indian festivals like Holi, Dushera or Diwali some of the more active Indian professors used to invite the Indian students to their homes and that is how we used to meet and know about who the other Indians in UF were. Hence there was a general frustration among the Indian students and community about the lack of a platform for getting together and sharing the news about themselves and India.

Having dabbled in student politics in IIT Kanpur I decided that it maybe worthwhile to resurrect the Indian student association. Udai Pratap Singh one of my IITK classmates was another proponent of this idea. So we both decided to do something about it. The first order of business was to find out who the Indian students and faculty were there in UF and get their addresses and phone numbers. So we arranged a meeting of all the Indian students and faculty members that we knew in Reid Coop in my room. We removed all the furniture from the room and arranged an Indian-style sitting place with mattresses and cushions (basically pillows). About 30-40 Indians – both students and faculty attended

and that is how the first meeting of the new Indian student association took place sometime in fall quarter of 1975.

I had been warned by old timers that quite a few of the Indian faculty members had tremendous egos and they had always tried to control the association. I thought that was a sign of petty mindedness and so during the meeting, I stressed as much as possible the desire of all of us to work together and run the show. I profusely praised the faculty for doing a great job of arranging the get together of Indians and so assuaged their egos. Since I had taken the initiative I was elected the president. Immediately I made sure that the egotistical Indian faculty members would be the key advisors to the association. It was a different matter that they were hardly consulted later on because I found out that they had no new ideas.

I also informed the general body that since Udai Pratap Singh was equally responsible in getting the whole thing started he should be an integral part of the association though he was not a student at UF. In fact the whole show later on was run only by the two of us.

The first thing we decided to do was to make a newsletter of our association. So every month I used to call the Indian students and faculty, get all their news, get two pages of the newsletter typed up in Udai's office and during weekends go to his office and make 50-60 cyclostyled copies. These copies were put in the mailboxes of students and faculty. After the first newsletter was delivered we started getting lots of

phone calls from students and faculty with their news items because everybody wanted them to be put in the newsletter. This was before the era of internet or fax and so this was the only way in which the Indian community could remain connected.

We also planned to show every month an Indian (read Bollywood) movie and to arrange for at least 1 or 2 get together and dinners per year. These events allowed the Indians in and around Gainesville to come together and socialize.

In the mid 1970s, if I remember correctly, US had only one Bollywood film distributor who was situated in New York. So we contacted him and told him that we are a small Indian student association and would like to show the movies to a very small audience. I now forget the exact amount but he agreed to send us the movies at nominal fees, the only stipulation being that we would have to take 12 films per year. We did not have too much choice in selecting the films, but the distributor assured us that we would get the latest movies. The movies therefore used to be shipped in aluminum cans by the Greyhound bus and after their screening at UF again shipped back by Greyhound bus either to New York or to whichever place the distributor told us to send them since these movies used to circulate all over US. The distributor also stuck to the schedule quite closely so that the movies were shown on time and on the day that they were announced.

So every month I would book the auditorium in the Reitz student Union for \$ 15 and a projectionist was hired for \$ 5. The movie tickets were priced at \$ 1/-.

The lady who used to book the auditorium in Reitz Union used to chat with me and had become friendly. One day she remarked, "You know I would love to go and see India but what is stopping me are the snakes!" I thought she was kidding but she was dead serious and was very afraid of snakes. So when I informed her that I had seen more snakes in my life in Gainesville than anywhere in India she was quite shocked. Such was the knowledge about India of large number of Americans and probably is true even today.

I hated Bollywood movies and found them really childish. Even in India I hardly ever saw them. So after getting the movie started I would come out of the auditorium and sit outside reading or talking to other Indians who would come out for a smoke or some other things. Most of the times the movie print used to be alright, but once we received a movie which had a really bad print and hence the reel broke down a couple of times during the projection. There was an immediate clamor by the audience that their money should be refunded! It was just like in India where *paisa wapis* used to be a regular refrain for the slightest problem in screening a movie. I could not believe that all the faculty members and even students would want their \$ 1 refunded!

Showing movies made the India association very popular. It was the single most important reason for its success. We

started getting Indians from cities like Jacksonville and Ocala besides a good number of Bangladeshi and Pakistani students also attended them. With a couple of well organized dinners during Diwali and Holi our association became one of the most active foreign student associations on UF campus.

In fact a lot of Pakistani students became my friends through the Indian student association. It came as a great surprise to me to see so much camaraderie between Indian and Pakistani students. This was mostly true for younger students of our age group (20-25 years of age). However some of the older ones secretly harbored grudges against Indians and once this led to a peculiar situation.

A middle aged female Pakistani student, who had come to US under Pakistan Government Scholarship, used to come regularly to India association movies and dinners. We became good friends. She used to treat me as her younger brother and never stopped giving me unsolicited advice! One of the constant advices she gave me was to never get involved with white American females! I could never fathom why she was so much against the American girls or felt the need to protect me!

One morning I got a phone call from the local police that an Indian female student had been caught shop lifting from a well-known store called Macys. I was aghast and also saw the news item in the local newspaper. So I requested the police to tell me her name and then I found out that she was the

Pakistani student. The police later on apologized since they had checked only her UF photo ID. I also sent a letter to the local newspaper asking them to put a correction regarding the story which they put the next day.

It was really sad that after treating her so well she responded like that when the chips were down. Later on whenever she saw me on the campus from a distance she would try to hide and avoid me. We never talked again.

Getting news about India in those times of emergency was very difficult. My father who himself became one of the victims of emergency because of his closeness to H.N.Bahuguna did not write at all about the events taking place in India because of fear of censorship and harassment. The American newspapers were woefully inadequate about the international news since they were least interested in world events that did not directly affect them. Hence whenever I saw a new Indian on the campus I would eagerly talk to him about the situation in India.

One day in the student cafeteria I saw a short, bald and middle aged Indian gentleman eating alone at a table. I went to him with my food and introduced myself. He appeared to be extremely unfriendly and after some time started raising his voice telling me that he did not want any company. I was taken aback by his extreme rudeness and told him firmly but politely that if I beat him up nobody would come to protect him! This immediately brought about a change in his behavior. He was the chief secretary of Bihar and on the run from Indira Gandhi. I think he had aligned himself closely

with Jayaprakash Narayan the person who started a mass movement in 1974 which led to the imposition of emergency by Mrs. Gandhi, and hence his desire for anonymity. In any case we became good friends but he left soon to go to some other campus. In those days such “Indira Gandhi refugees” went from one campus to another trying to discuss with students the issue of emergency and also to remain away from glare of publicity and information.

The activities of the association required a good deal of time and effort and I must have been getting really involved in them when I started getting regular nightmares that I had been demoted somehow to attend high school and I had failed to pass my Indian School Certificate exam. These dreams came very regularly and I used to wake up with perspiration. I could not fathom their meaning, but one day suddenly realized that maybe the unconscious was telling me that my real purpose of coming to UF was to get a Ph.D. and not run an Indian club! So I decided to reduce my activities in the association.

My efforts were further helped by the dissension in the association. As India association gathered momentum through regular movies (which also gave us good income), dinners and picnics some of the older Indian faculty members felt their control over Indian community slipping away. Besides they felt slighted by the way Indian students had behaved with the visiting Indian embassy official. So a prominent Gujarati faculty member decided to start a Gujarati Club. I vehemently opposed the idea because I told all the members

that we are Indians first and then only Gujaratis, Maharashtrais, Tamilians etc. Nevertheless the greed for power knows no bounds so I knew that this would be the end of a cohesive India Association.

I therefore decided to resign and one day before the start of an Indian movie I announced my resignation in the Reitz Union auditorium. The audience was taken aback and vehemently opposed my resignation. Still I persisted and handed over all the material to the treasurer and walked out. I had been President of India Association for a little over 9 months.

I was also getting disenchanted with the whole affair since many times I had told the association members that we should hold discussions about some of the major issues in India like energy, education, corruption etc. and how all the Indian students and faculty at UF can work together to provide a solution to some of them. However majority of Indians in UF were not interested in such issues and wanted to see only Bollywood movies and have a few special Indian dinners.

For example I wanted to show good Indian documentaries and movies from great directors like Satyajit Ray or Shyam Benegal but most Indians were interested in seeing movies like Sholay - the Bollywood blockbuster. I did screen this movie and it was the biggest crowd puller of all times. To majority of them this was the India that they identified with. Any type of intellectual discussion about India was not very



welcome or interesting because majority of the students were not keen on returning to India.

Nevertheless this desire to show good documentaries to the Association gave me an excellent opportunity to sample the Indian movies archived in the UF library. One movie that I saw is still vivid in my memory and made a tremendous impression on my mind. It was called “A day in the life of Prime Minister” and was shot by BBC in early 1960. The documentary showed Prime Minister Jawaharlal Nehru’s day from morning (breakfast) to late night dinner. The BBC team had picked January 26, India’s Republic Day for shooting.

So in one of the scenes Pandit Nehru was shown sitting in the front row watching the Republic Day parade with Krishna Menon the then defense minister and some foreign dignitary. It was quite a sunny morning so Pandit Nehru was holding a folded newspaper to shade his eyes. The scene showed Krishna Menon as per his nature continuously chatting with the guest. Nehru got quite irritated and said “Menon can’t you stop talking for a bit”. After this rebuke Krishna Menon kept quiet for a few minutes but again started chatting animatedly. By this time Nehru lost his cool and he whacked Krishna Menon on his shoulder with the folded newspaper and told him to shut up! I could not believe that the most democratic Prime Minister of India would behave like a school master with the Defense minister of India! I do not know whether this movie was ever shown in India.

I learnt a lot in running the association for 9 months and had a first hand experience of how we Indians fight each other even in a foreign land since we bring our own little India and our insecurities with us and thus it is very difficult to remain as a cohesive force.

Later on the Indian community at UF increased drastically. Hence today there are thousands of Indian students (both first and second generation) and hundreds of faculty members. Still whenever I visit UF few of the old timers left on the campus do talk nostalgically about the good times that they had when I ran the association.

## *Chapter 7*

# **Marriage**

There have been quite a number of happy incidents in my life for which I have no explanation, but have always considered them as gifts of God and so have felt blessed. Meeting my future wife in UF was one of them.

I first saw Nandini sometime in fall of 1975 in front of McCarty Hall which houses the Agriculture Science departments. I saw her from quite a distance and she being very tall, fair and with black hair I thought she was from South America. After that I did not see her for almost 10-15 days. Then one day I went to the Reitz student union cafeteria to eat and she was sitting alone and eating on one of the tables.

I asked her permission to join her and found out that she was an Indian and a Maharashtrian and her name was Nandini Nimbkar. She had come to do her graduate work in the department of Agronomy. She was quite reserved so I did most of the talking. After that meeting we would occasionally meet in the cafeteria and became friends.

I found out later on that Nandini came from a very distinguished Maharashtrian family. From her mother's side she was the great granddaughter of Maharshi Karve (the first Bharat Ratna of India) and a granddaughter of Shrimati Iravati Karve (a very well-known anthropologist). From her

father's side her grandfather Shri Vishnu Nimbkar was a well-known industrialist of Mumbai and her grandmother was an American (Elizabeth Lundy who changed her name to Kamala Nimbkar after her marriage to Vishnu Nimbkar) and also a daughter of revolution. She was a direct descendent of Robert Morris the Secretary of Treasury in George Washington's Cabinet.

There were only two or three Indian female students at UF and at least 10 times more male students so obviously the females were subjected to intense wooing. This led sometimes to a number of heartaches and fits of depression. In any case we both were attracted to each other and hence in April 1976 we decided to get married.

Since Nandini was nearly five foot ten inches tall and thin, most of my Indian friends used to call her single dimensional! Nevertheless she was very attractive and graceful. Quite a number of my American friends were amazed that I was going to marry a girl who was nearly four inches taller than me! Some of them even tried to dissuade me from marrying her. It came as a great surprise to me to see such backward thinking of American males.

In fact the difference in our heights led to some hilarious episodes. Just after our marriage we went to a photo studio for a portrait. The lady photographer would not allow us to stand together. Nandini had to sit down on a stool and I had to stand next to her so that one could not see the height dif-

ference. The photographer explained to me that in portraits a wife can never be taller than her husband!

After both of us decided to get married, I immediately called my parents in Lucknow. In those times calling to India was not very easy and so one had to go through the international operator in New York, the operator in New Delhi and finally the one at Lucknow. The operator in New York who seemed to be up-to-date on news started asking me about what was happening in India with Indira Gandhi's emergency and dictatorship. I was really surprised by the knowledge of this lady.

The first question my mother asked me was whether she was an Indian or an American. When I told her that she was Indian and a Maharashtrian, she was thrilled because she felt that an Indian daughter-in-law from any state is better any day than a foreign one. In those days quite a number of Indian students married Americans and my mother was always afraid that I might also do so. My parents also knew my opposition to arranged marriage because I was against dowry and in my bania caste dowry was a big thing. So I had told them that if I marry it will be without dowry and to a person whom I like.

After telling my parents about my decision to marry Nandini, I wrote a six-page letter to my future father-in-law asking his formal permission to marry his daughter and also telling him about myself and my family etc. I never got a reply to that letter from my in-laws, but Nandini told me that even if

they refused it did not matter. Nevertheless my in-laws accepted our decision happily later on.

Since Nandini was very thin, during our courtship period, I used to take her regularly to Baskin Robbins ice cream shops to fatten her! However her metabolism was so good that such acts of generosity never made a dent in her single dimensionality!

I had peculiar notions about marriage which were dictated by my male ego that I should marry only when I was able to support my wife. Since I was still a student I thought we should wait till I finish my Ph.D. and get a job. However living separately in the same town and just across the road somehow did not make much sense.

We used to meet every evening for dinner in Reid Coop where I used to cook for her. Lots of times we also went out to eat, but being busy in our studies and as students living on shoe-string budgets, I found it cheaper and simpler to cook the dinner for both of us.

This went on for 3-4 months and since we were spending most of our free time with each other we thought it would be better to get married and move out into the on-campus married student housing. This would have also been cheaper for both of us since we would be saving on double housing. Thus I applied for the married student housing and was asked to occupy it in the last week of December 1976.

So we fixed the most convenient date for our marriage on 12th December 1976 which was a Sunday and just after the fall quarter.

I was also vehemently opposed to the idea of going to India to get married since I believed that the whole thing should be a simple and elegant affair. Nandini also did not mind since her parents did not believe in wedding ceremonies, so we decided to get married in Gainesville. Obviously my parents were not very happy about it since they wanted our marriage to be held in India. Being the eldest son they wanted the first marriage in the family to be a grand affair. Somehow I could not fulfill their desires.

When Nandini had come to UF in the fall of 1975 she had stayed with an American family the Webbs. Tom and Dot Webb had been to India and stayed in Pune as Tom was a USAID consultant. They had become friends with Nimbkars. Both of them were extremely nice people and lived in Gainesville where Tom was associated with UF Agronomy department where Nandini came for her graduate studies.

Thus the Webbs were foster parents to her in Gainesville. So they told me that they would give her away during the marriage ceremony and hence would be very happy if the marriage took place in their house. They also found a nice priest cum lawyer to conduct the ceremony. The gentleman who was a padre in the local church told me that he would have me and Nandini exchange Christian vows during the ceremony.

Though I was all for a simple marriage, exchanging Christian vows was not acceptable. Hence I asked him whether it would be all right if we exchange vows from Vedic texts. He agreed to it.

So for next two days I went to the UF library and studied thoroughly all the material regarding Indian marriages and vows written up in our ancient Indian texts. I also found that a majority of times Sanskrit shlokas exchanged in traditional marriages had no relevance to modern life. Thus in one shloka both husband and wife ask for 10 sons and 20 cows. I thought the modern translation of the shloka should be to ask for 10 factories and 20 Mercedes cars!

During this research I also discovered that Mahatma Gandhi had tremendously simplified the Hindu marriage vows since he was also pained to see the unnecessary ritualization of the marriage ceremony. His marriage vows lasted for only 15 minutes.

In any case after a good deal of research I chose some beautiful vows from the Vedic literature which in effect said that we were both equal partners in the new matrimonial alliance that we were entering.

I then went over these vows with the priest since he had to rehearse the pronunciations of the Sanskrit names in them. The priest was highly impressed with the whole process and suggested that we should invite the local TV to record this ceremony. Both of us politely declined his suggestion.



So on 12th December 1976 we were married in Webb's home in front of a few of our close friends. I was 26 and Nandini was 22 years old. We were the first Indian students in UF to get married in Gainesville. We have been happily married since then and last year in 2006 celebrated our 30th marriage anniversary.

My parents had booked a phone call much in advance to wish us on our marriage, but calling from India to US in 1976 was like calling the moon. They could not get the call through on that day and were only able to call me after a couple of days. My mother always regretted that incident.

For the next 10 days after our marriage we still lived in our respective dorms till we got the on campus married student housing in Diamond Village.

Living together as a married couple required a good deal of adjustment on our parts. Quite a number of times there would be tiffs which I believe every young couple goes through in their early married life. The Indian milieu provides for an extended family support structure which helps in ironing out the differences. However when one lives alone in a foreign land then this support system is not available. In any case we adjusted very well and I always felt that it was one of the best decisions of my life to get married and live together. Marriage provided a tremendous emotional support and helped against loneliness that one sometimes feels in US.

I also did not ask Nandini to change her maiden name because I thought that a name is an important part of one's personality and hence should remain with the person throughout their life. In those times it was quite a revolutionary thing. More so since in Maharashtrian custom the wife not only takes her husband's last name but her first name is also changed! Therefore the identity of women after a Maharashtrian marriage is totally changed. I thought that was a barbaric custom. Nowadays there are many Indian married couples where the woman retains her maiden name.

Nandini did not know any cooking at all. During her first year's stay in Beaty Towers she used to eat out in the Reitz Union Cafeteria where we had met. When we started dating we used to have lunch in the cafeteria and for nearly six months before our marriage I used to invite her in Reid Coop for dinner. So after marriage I taught her some cooking.

In any case she did learn quite fast and used to occasionally dish out delicious fare. Being students we both shared all the housework including cooking. So for 3 days I would cook dinner and next 3 days of the week she did it. Very soon it got to the point that when my turn came I would propose to take her out for dinner. So a number of times she ended up cooking for 6 days in a week!

Since both of us liked American food, we ate out quite a lot. In fact every Friday or Saturday we would go and see a movie either at the Reitz Union or in outside theaters and have a nice dinner in one of the various new restaurants that were

opening up in Gainesville as it expanded. In those times there were no Internet or DVD movies and there were only 4 channels that one could get in TV. Hence a theatre movie was one of the main entertainment sources.

Nandini was also an excellent student and consistently got A's in her courses. Her professors were very fond of her. She must have made a lasting impression on them and her peers since in 1997 she was honored by UF as one of the most distinguished alumna. Since 1997 was the 50th anniversary of co-education in UF it was decided by the UF administration to honor 47 female graduates from all over the world who have excelled in their chosen field. They were chosen out of about 85,000 female students who had passed from the university since 1947. Nandini was the only Indian and a non-US citizen chosen for this award.

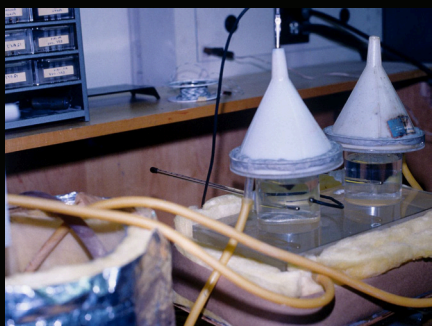
In a glittering ceremony at UF in September 1997, she was honored with 46 other graduates which included President Clinton's cabinet member, Hollywood actress, Olympic gold medalist, Chief Justice of Florida, etc. etc. Her name with that of others is engraved in a plaque in the center of University and her photograph adorns the Reitz Union wall in the main lobby and where we had met for the first time!

Another thing that bound us together was our desire to go back to India. Nandini was even firmer than I was. Though she was born in Tucson, Arizona and hence a US citizen she had renounced her citizenship before coming to US. It is a very rare act and I have never met another person who has

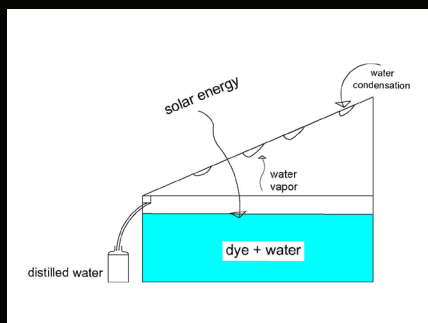
done it. Both of us were quite determined to start our careers in India. Where in India it would be we were not sure. In fact during my stay in US I interacted with lots of my Indian friends who wanted to go back to India, but their wives were not keen on doing so. It was therefore a rare phenomenon in those times to see student couple in US who wanted to come back to India.

Since we wanted to go back, we did not want to raise our children in US. Almost all our Indian friends and other married students in Diamond village thought we were crazy since having children in US was a sure shot passport to staying in US and also beneficial for the children's higher education. I always thought that if our children were bright enough they would come to US on their own just like us. Besides we were both students and also wanted to travel all over US, and maybe to other countries, and hence having the burden of children would not have been conducive to carrying out these plans without the usual family support system.

When we came back to India in August 1981 then within a year of our coming back our first daughter was born. She is following the tradition of her parents and is presently doing her Ph.D. in University of Florida!



Effect of high voltage on distillation  
September 1975



Schematic of Anil's Ph.D. work : effect of  
dyes on solar distillation



Anil with Dr. Erich Farber,  
1977



With Dr. Atma Ram's family in Delhi,  
February 1978



Studio photograph after our marriage,  
Decemeber 1976



With Anil's father (left) and Shri Sunderlal,  
February 1978

## *Chapter 8*

# **Looking for Better School?**

When I arrived in UF at the end of 1974 the situation on the campus was pretty grim according to US standards. There was no electricity in the departments during the weekends and due to cost cutting measures phones were also disconnected from graduate student's offices. Luckily I was given a good room in the main Mechanical Engineering building which I had to share with three other American graduate students. Two of them hardly ever came to the office so basically I had only one other graduate student in that room.

The students I encountered in the courses I took in my first quarter were much below the quality of my classmates at IITK. Besides the first course that I took under Dr. Farber was on Direct Energy Conversion and was quite a fiasco. I found out that he had little knowledge of the theoretical material and presented no new insights other than what was written in the textbook. I questioned him one day in the class about it and he went on a tangent about how he was a great man and how dare a foreign graduate student question him. In fact my questioning must have rattled him quite a lot because he spent two full lectures berating me rather than answering the question. The 25-30 students who attended the class were also horrified and they told me that nobody questions the great Dr. Farber. Nevertheless they were happy that

somebody had the guts to poke holes in what Farber was teaching.

This was my first real interaction with Dr. Farber for whom I had come all the way from India. This episode together with the quality of graduate students and the run down condition of Mechanical Engineering department suddenly made me aware that I may have come to the wrong place. Now I remembered the words of Mr. Sharma - the clerk in the Education ministry in New Delhi who had warned me that I was making a mistake in going to University of Florida. Thus I decided to leave UF and go to some other university at the earliest opportunity.

So I called the professor in Mechanical Engineering at University of Michigan in Ann Arbor (UM) – the one whom I had befriended in IITK and told him about my predicament at UF. He was delighted to hear from me and immediately offered me admission in the graduate program since I already had a Government of India (GOI) fellowship. He also said that he will match that fellowship with the department funds. Then he asked me my office phone number so he could call me back. I told him that because of cost cutting measures we do not have phones in our offices to which he replied “Not only we will take you in our department, but will give you an office with you own phone! All our graduate students have phones in their offices”. The offer was very tempting and hence I decided to go and visit UM and some of the other well known schools at the first opportunity. This was my first motivation to travel in US.

Dr. Farber being a sharp person must have seen something in me during the classroom exchange and so he became quite friendly towards me and started talking to me more often and discussing various issues on solar energy. He being a very knowledgeable person in solar energy, his insights on that subject was very illuminating and I started liking him. Still I thought it might be worthwhile to visit other universities and see the grass on the other side!

Since winter and spring quarters were nearly back to back it was not possible to go sight seeing in US for any length of time. I therefore decided to see America during the summer break.

A golden opportunity to do so arrived in the form of friendship with one Alok Krishen who was a graduate student in Florida State University (FSU) in Tallahassee. Alok had come to Gainesville to meet his friend and that is how I met him. We liked each other and so when he told me that he would be traveling to northeast US during summer break and was looking for a traveling companion, I immediately jumped at the opportunity. Naturally we had to decide on a mutually acceptable timetable.

Alok had a very small car called SIMCA. I think it was one of the smallest cars available in US in those times and barely seated 4 people. He had also bought it second hand for \$ 250 but he assured me that it worked well and there would be no problem during the long trip. In order to share the cost of traveling we decided to have 4 people. So Alok got a



Chinese student from FSU who wanted to go to Detroit for his brother's wedding and I located another Indian student in UF who also wanted to travel in America. Out of the four of us only I did not know driving so my job was that of a navigator and to entertain others by singing and telling jokes etc.!

Our plan was to visit only those cities and places where we could stay with friends and relatives so as to avoid the hotel expenses. Alok who had come to US one year earlier than me had quite a few friends and relatives in different cities. In north-eastern university towns I had quite a number of my classmates, so we made the program of staying with as many of them as possible. We had arranged the trip for about 20-days but had kept it flexible so that we could change our itinerary in case we liked a place.

We drove straight to Detroit to leave the Chinese student. After leaving him we traveled to major universities like Cornell, N.Y.; Princeton, N.J.; SUNY, Buffalo; Case Western University, Cleveland; University of Toronto; Michigan State University (MSU), East Lansing; University of Michigan (UM), Ann Arbor; and University of Pittsburg. Since I was interested in Cornell, UM and Princeton, I spent time discussing with students there about the well-known professors in solar energy or thermal science. I always felt that the best judge of a professor are the students who can tell both his strong and the weak points.

In majority of cases I found out that since the professor was very famous he was traveling most of the times on lecture trips and the students hardly had any opportunity to interact with him. They interacted with each other more often and being a good school there were many bright students around who helped each other. Besides in the big universities like Cornell, UM, etc. getting a Ph.D. was like going through a factory assembly line. Publish 3-4 papers in 3-4 years of research time and you are out of the university with a Ph.D. Besides the type of projects that the students worked on were dictated very much by the professor and were focused and on narrow subject areas.

I on the other hand by now (more than 6 months had passed in UF) had found out that I was able to meet Farber at least once a day when he was in town, had total freedom to pursue whatever my interests were and could discuss with whichever professor I wanted in other departments. Since I was a very independent minded student with varying interests, I realized that the best course of action would be for me to pursue my Ph.D. at UF and try to learn as much as possible from the opportunities available. I never regretted this decision because I really learnt tremendously at UF under Farber and besides I also found a nice wife at UF!

Nevertheless this trip to various universities allowed me an opportunity to see some beautiful campuses of MSU, UM, Princeton, Cornell and University of Toronto. I also saw the ugly cities of Pittsburgh, Cleveland (Ohio) and Buffalo. This was summer and yet in some cities like Ithaca, N.Y. where

Cornell is located it was still quite cold. I suddenly realized that besides education, nice outdoor weather is also a necessity for enjoyable campus life. So this was a very chastising experience and I never again had any doubts about my UF education.

Staying with American friends and their families also allowed me to sample the American way of life. I found out that almost all the families that I stayed with were extremely hospitable, kind and gracious. America in 1970s was a wonderful place with openness, liberal outlook and tremendous freedom. Unfortunately later on American society became quite conservative because of the series of unfortunate incidents like Iran crisis in 1979, 9/11 etc.

I stayed with an American family in Dearborn Michigan. They were parents of my Reid Coop friend. His father was a senior manager in General Motors (GM), so this was also an opportunity to see the GM engine plant near Dearborn. Visiting this plant I saw first hand the powerhouse of American industrial might which was a great educational experience. During one of the evening dinners at their house somehow the discussion turned towards the responsibility of children towards their parents. When I told them that in Indian culture the children have the responsibility of taking care of their aged parents, my friend was immediately chided by his father that he should learn this lesson from me!

I have always believed that on the whole families in almost all countries are quite decent. It is the governments that bring

in hatred. I therefore used to tell the foreign student administrators in UF that besides giving university education to foreign students provision should also be made for students to spend some time with an American host family.

The summer trip to Northeast was thoroughly enjoyable and was full of interesting episodes.

As we were passing through Georgia on our way to Detroit we ran out of gas. This was nearly midnight and we found ourselves in a small town called Macon, Georgia. As we were going round and round in this small town looking for a gas station a cop appeared flashing his car lights. When we told him our predicament he was very helpful and took us to the gas station. He and his colleagues started talking with us asking us where we were from so we told him that we were from India. "You came all the way from India in this small car?" he remarked.

Since we were students we tried to drive the whole night without stopping. This was partly to save on hotel bills and partly to take the Chinese student to Detroit as quickly as possible. All three of my travel mates took turns in driving and since I was the navigator I had to keep awake. As we were reaching Atlanta it must have been nearly 3 a.m. when I must have dozed off and was suddenly woken up by a loud noise of somebody honking feverishly.

The driver had also slept on the wheel and our car was dangerously swerving on the highway at high speed. The car

driver behind us was therefore honking. I woke up and slapped our driver and told him to pull over to the curb. I think we came closest to death on that particular night and were saved by sheer stroke of providence. I then forced everybody to go to the nearest hotel and sleep and only in the morning we left for our onward journey.

Similarly in Canada when we were approaching Toronto we were passed by a car full of University girls who were probably traveling like us during summer vacation. Alok who was driving wanted to race them. These girls were in a brand new car whereas our old SIMCA was not upto the occasion. In any case Alok must have raced them for 5-10 minutes before we heard a loud noise from our car and it broke down. The accelerator wire had broken. Alok got under the car and fixed it since he seemed to have done it many times before! After this he drove very nicely till the car completely broke down during the last leg of our journey near North Carolina. Alok wanted to sell it to a used-car garage but the garage owner said that he would charge us hundred dollars just to take the car since it was pure junk! In any case after a great amount of haggling we just dumped the car in the garage and took the Greyhound bus back home.

I also saw wonderful natural beauty of American landscape like Niagara Falls, Thousand Islands in New York and great countryside as we drove from Gainesville to Toronto and back. We also spent one week in Washington D.C. visiting Smithsonian Institute, White House, Library of Congress etc. In Washington we stayed with a lovely family of Jim and

Estellene Baarda with whom we have remained as good friends.

I was really awed by the gigantic size of the Library of Congress (LOC). The libraries in UF in those times were not really great and so visiting LOC was like seeing a treasure trove. I could not get away from the LOC as there was so much to read. Similarly Smithsonian Institute was something else. This was my first visit to a world class museum and I was really taken aback by the world treasures that I saw there.

Besides the great things, we also saw the ugly side of American cities and way of life. We were in Ann Arbor visiting some of my IITK friends in UM when in the evening we decided to go to Detroit to eat some good Chinese food. In 1975 Ann Arbor, just like Gainesville, did not have a good Chinese restaurant and hence we decided to go to Detroit. Since my friend at UM did not know the address of any good Chinese restaurant we decided to go to downtown and search in yellow pages in one of the hotels. We arrived at Holiday Inn in downtown Detroit around 6:30 p.m. and I went in the lobby to look at the yellow pages for the restaurant. Alok in the meantime went to the rest room. After 5 minutes he came out ashen faced. I could not believe the look on his face. So I immediately asked him what happened. He said a black man tried to rape him in the bathroom. We immediately left the hotel and headed back to Ann Arbor and ate our dinner in a nearby McDonalds restaurant.

In fact almost all the downtown areas of major cities in US in 1970s were in very bad shape, being full of crime and prostitution. In contrast downtown Toronto was beautiful, clean and fun to walk even late at night. The difference between US and Canadian cities was amazing. We also saw the run-down condition of cities like Pittsburgh, Buffalo and Cleveland. Somehow the southern part of US like Florida seemed much cleaner than the northeastern USA. Nevertheless in late 1980s and 90s there was a dramatic revival of down towns in all major cities of US.

## *Chapter 9*

# Exploring America

Most of my American travel was work-related. However when I could, I took time out and used to take side trips to see that great country.

During one summer break I and Nandini decided to travel to the southwestern states and then to California to see solar energy work being done in various universities and organizations and also to visit Grand Canyon, Carlsbad caves and see cities like San Francisco, Los Angeles etc.

I had just finished my qualifying exam and nearly finalized the topic I would be working on for my Ph.D. Nevertheless I thought it would be wonderful to go and see what major labs and universities were doing in solar energy and maybe to get some inspiration from their work. There were a lot of activities in energy R&D in US during President Carter's era (1976-80). He called creating national energy security as moral equivalent of war. Hence not only universities but national defense labs like Sandia labs in Albuquerque, New Mexico had started working in solar energy.

In those times there was Ameripass of Greyhound Bus Company which allowed unlimited travel in \$100 to any city in US for one month! Thus we felt this would be a great way to see America. We also decided to save on hotel bills since we



did not have friends at many of the places that we wanted to visit. Hence we used to travel mostly at night and visit the labs during day time. Later on in 1978 I gave the same Greyhound pass to my parents when they were visiting me. This allowed them to travel all over US and enjoy America.

Our first stop was Albuquerque in New Mexico to see Sandia labs. An interesting incident happened at the New Orleans bus stop. Our bus from Gainesville reached there around 4 am in the morning. There was a half an hour stop so we started getting down still groggy and sleepy. At the bus exit door an immigration officer stopped me, flashed his immigration badge and asked for my passport. I was half-asleep but felt affronted by this sudden confrontation. So I asked him to show his badge properly! He was slightly taken aback but showed it and told me not to touch it. Once I was convinced that he was a genuine immigration officer I said "Why do you need my passport? I do not carry it with me all the time". "Sir you should carry it always with you. We are looking for illegal Mexican immigrants" he replied. After I showed him my UF photo ID he left. It is unimaginable in the post 9/11 scenario to have an exchange like this. I would have been in real trouble for questioning an immigration official !

Sandia labs in those days was doing pioneering work in solar power. In 1975 they had set up the world's first 5 MW solar power plant. The concept was called Solar Power Tower in which hundreds of mirrors placed on the ground reflected the sunlight to the top of the tower where the concentrated

solar beam heated a material (generally some inorganic salts) which in turn heated water to produce steam and hence power. The sight of the mirrors focusing the beam on a single tower was very impressive and heralded a space age solution to energy crisis.

The head of solar energy group at Sandia lab was one Dr. Stromberg whom I came to know quite well through correspondence and phone calls. Since I worked with Dr. Farber, a renowned solar energy expert, I was welcomed to visit Sandia. Besides in those times most of the labs and universities welcomed the students visiting them and were very helpful regarding research. Later on because of security reasons they started to tighten up on such visits.

Still I remember that when I came back from my California visit, Farber kidded me by saying that he would like to know beforehand where his students were going. "I got phone calls from Washington asking me who is this Indian student of yours. Is he a terrorist or a genuine scholar?" Farber said. I was not aware that anybody going to Sandia labs had to have a background check done on him. Later on I found out that since the lab made atomic weapons all visitors had to be subjected to such checks. So this background check was provided by my department at UF after I had left for my trip. Those were simple days when a few phone calls were enough to do these checks.

However slightly later on in 1980 when I took about 40 participants of the course on Training in Alternative Energy

Technologies (TAET) from our lab to Sandia we had to give a detailed biodata of each participant to the State Department in Washington D.C. and then only got permission to visit. Even after getting the permission one was not sure about what might happen in the lab. For example as we were on our way to visit the Solar Tower site, a convoy of trucks carrying atomic weapons was being taken from the manufacturing facility to the storage facility in Albuquerque mountains and hence our bus was stopped. Somehow this information reached Washington that a bus load of foreigners were witness to the atomic weapon transport. Immediately our future trips to Albuquerque were stopped. In 1980 just after the Iran crisis the security to most of these labs was increased. Today one has to do a lot of paper work before a foreigner is allowed into these labs.

In any case Dr. Stromberg welcomed both me and Nandini to his lab and took us on the tour of Solar Tower in an electric car! This was probably the first electric car in US. It was a rudimentary vehicle with hardly any great electronics but was very functional and traveled at 40-50 miles per hour. Once it reached the solar site it was plugged into the solar charger for battery charging. I thought it was a great idea to showcase the solar economy!

The Solar Tower facility was very impressive and was basically a research lab where dozens of doctoral and postdoctoral students were conducting research on various aspects of electricity generation by solar thermal process.

There was a pleasant surprise in store for us during our travel from Albuquerque to Tucson-our next stop. At the bus station there was quite a rush and hence we could not get into the first bus. But immediately Greyhound Bus Company got a second bus only for the two of us! We could have never believed that the bus service would be so efficient. We were therefore the only passengers on the bus all the way from Albuquerque to Tucson. The Greyhound bus service was extremely efficient and prompt in those times and it was a pleasure riding the buses. Unfortunately today the story is very different and the service has deteriorated drastically.

Besides the Sandia facility I also visited during this trip the solar energy work being done at the University of Houston (solar concentrator work); Arizona State University, Tempe (Dr. John Yellot's work on solar passive cooling); University of California, Los Angeles (UCLA) (high efficiency solar collector work at Dr. Edward's lab); U. of California, Berkeley (Sea Water Conversion lab which was doing pioneering work in desalination); Colorado State University, Fort Collins (Dr. George Lof who was one of the pioneers in solar energy utilization); University of Arizona, Tucson (Green house solar lab which was the forerunner to the world famous Biosphere project in 1990s).

Visiting these labs was a great learning experience and brought me up-to-date on all the major work going on in US in solar thermal applications. At most of these places I was referred to as Dr. Rajvanshi and some of the professors were surprised that a graduate student who had just passed the

qualifying exam would undertake such a journey on his own. In fact in those times it was rare for a foreign student to go around the country visiting labs.

After my summer visit I gave a one-hour seminar in our department on my trip. It was probably the first such seminar based on a student's trip and later on Farber suggested that other students, whenever they went for lab visits, should come back and give a seminar. After the seminar the departmental secretary told me that the mechanical engineering department would reimburse my travel and staying expenses for this trip. I never took any money from the department for such trips even later on since in those times travel was very cheap and I mostly stayed with my friends. Besides I enjoyed the travel and meeting people. In any case I became good friends with most of the researchers and faculty I met, especially Dr. George Lof and Dr. Yellot. Besides I also made unexpectedly some new friends in Tempe.

We reached Tempe, Arizona in the morning by the Greyhound bus which deposited us at a nondescript bus station. In those days Tempe - the home of Arizona State University (ASU) was a small university town. So after getting down we were walking on the street near the bus station and debating on how to go to ASU to meet Dr. Yellot and see his lab. Should we take a bus or hire a taxi. We had no place to stay but thought that once we reach ASU campus then we would find something. In those days quite a number of US universities allowed free stay in dorms during summer break to students visiting from other universities. Nandini that day

had worn a sari and both of us were looking quite disheveled since we had spent the night in the bus traveling from Tucson, Arizona.

Suddenly a car stopped by at the corner of the street and an Indian gentleman asked us whether we needed a ride. He was Nimish Patel who was also a student at ASU. He and his wife Parul Jhaveri were architects and were spending one year as apprentices at ASU. We were delighted at this god sent opportunity and both of us thoroughly enjoyed our stay for 2 days in their small apartment. In those days ASU did not have too many Indian students and hence Nimish was also delighted to meet us. Since then we have remained good friends and today the Patels are very successful architects of Ahmedabad.

In those days Nimish Patel's mother was also staying with them. Hence with two of us as guests, their small apartment became very crowded. But we were subjected to very gracious hospitality by the Patels. I still remember an amusing episode. Nimish was quite plump when we met him. Yet his mother complained to us that her daughter-in-law did not feed her son properly and did not give him enough milk. Nimish mildly objected by telling her that instead of milk he ate ice cream! "Milk is milk and ice cream can never replace it", said his mother. Both of us could not hide our amusement at how a mother's fixation for milk continued even after the children had grown up!

The Carlsbad caves and Grand Canyon were really fantastic sites. America is really blessed with beautiful landscapes and national parks. Besides they have been maintained well so visitors can see and appreciate the natural beauty. This was quite a contrast to what I had seen in India. In fact some places in India have unsurpassed natural beauty like beaches of Maharashtra, Himalayan mountains or rain forests of Kerala. Yet we do not keep these places clean or visitor-friendly.

In the Grand Canyon we met a Japanese group which had 10-15 members. They were not interested in seeing the beauty of the Canyon but only in taking photographs. At every scenic spot they would get down from the shuttle bus, quickly take photographs and again get back on the bus. When I suggested to them that they should sit and enjoy the beauty of the landscape, the head of the delegation said, "We will sit in our living room and watch all these slides"! Japanese have always been known to be great photograph-takers. Once when I was leaving a Japanese delegation which had been visiting our solar lab, at the Gainesville airport the head of the delegation even took a photo of my car number plate!

I crisscrossed the country later on many times and tried to see as many of the national parks and landscapes as possible. Thus I saw the Rocky mountain range at Yosemite National Park where we stayed in a log cabin for a week. Similarly we traveled to Smokey mountain ranges where I did some trekking etc. Besides this there were many opportunities for camping. I have always believed that US is a great

place for tourists to see its natural landscapes and not its big cities which are nearly similar with same type of shopping malls, eating places etc. Nevertheless too often the foreign students do not go to these places of natural beauty but like to visit only cities.

Our first trip to Berkeley was quite memorable. After getting down at Oakland Greyhound bus terminal we took the local bus to Berkeley campus. We were given a free dorm at Berkeley for 3 days. As we got on the bus, Nandini looked for her purse to pay the fare. Suddenly we realized that the purse had been left at the bus stop! It contained all our money and important papers. Since we were carrying 3 bags and pillows somehow in the hurry to get in the bus Nandini left the purse on the bench at the bus stop.

I requested the bus conductor to stop the bus but he said that it will stop only at the next station. We got down at the next station which was a good half a mile from the bus stop where we had boarded the bus. I have never run so fast in my life as I ran that day for half a mile. On reaching the bus stop I found that the purse was not there. Suddenly in the distance I saw a man carrying it. I ran after him without saying a word fearing that he might run away if I shouted. When I reached him I told him that it was my purse. He immediately gave it to me saying that he was taking it to the Post office so that it could be returned to me. I thanked him profusely and offered him a \$ 5 token award. He refused to take it. We were always warned by our friends that there was a



lot of crime in the Oakland/Berkeley area but this was a shining example of a very honest citizen of this area.

After checking into the dorm we went to take bath. The dorm had common bathrooms and toilets. The women's bathroom though was on a separate floor. So when Nandini went to the shower she saw a couple taking bath together in the next cubicle! Berkeley was even more liberal than UF!

I went to the Mechanical Engineering department to meet the Professor whom I had befriended in IIT Kanpur. The secretary asked me whether I was from IITK? I was surprised by her clairvoyance but she clarified by telling me that all the Indian's in the department are from IITK and so she presumed that I must also be from IITK! In 1976 IIT had not become a brand name but at least in some top schools like Berkeley, IITK was very well known.

Besides the university campuses we also visited the big cities like Houston, San Francisco, Los Angeles, San Diego, Tucson and St. Louis. Both of us enjoyed visiting museums and sampling good local ethnic food. In Tucson we went looking for the hospital where Nandini was born in 1954. However to our dismay we found that it was demolished and in its place stood a shopping mall.

We were suckers for visiting various museums to see great work of art and exhibitions. Besides driving to New Orleans in 1977 just to see Tutankhamen's exhibition we also saw the Picasso perspective exhibition held in New York Museum of

Modern Art in summer of 1980. We stood for 6 hours in a long queue in New York to get the tickets and another 4 hours to enter the Museum! This was the longest I had stood in any queue in US.

Later on during our many travels in the US there were quite a few amusing incidents. I was once driving through Kansas State when we decided to stop for the night at a very small town called Oakley. If I remember correctly in 1979 the town population was probably 500. There was only one hotel and one decent restaurant. So when we went to eat in the restaurant almost the whole town came to see us since Nandini was wearing a saree! I guess in those days very few Indians passed through such conservative small American towns.

Similarly I had gone to Fort Collins, Colorado for a conference in 1980. One evening we together with our friends, decided to go out to a nice restaurant for dinner. I drove on a particular road where no U turns were allowed and since the restaurant was on the other side of the road I had to take a turn. After driving for a couple of miles I became impatient and decided to take a U turn after checking that there was no cop around. However within seconds a cop materialized and started flashing his car lights.

In my 7 years' stay in the US I never got a traffic ticket and I was very proud of my record. Couple of times I did get parking tickets at UF campus but they were never for speeding or driving related offenses. This would therefore have been my first traffic violation. So I was very afraid that my record

will be tarnished. I got out of the car and told the cop "Sir I am totally guilty of wrong conduct and will accept whatever ticket you give me". Normally there is a tendency in the drivers to argue with the cops in such situations. So this cop sensed my feeling of guilt and was very surprised at my frank admission. "Sir where are you coming from"? he asked. I told him from Gainesville so he replied "Yes sometimes these U turns are pretty bad and get on the nerves of out-of-town drivers. Please drive carefully next time", and left me off without a ticket!

Another travel related incident was not very memorable. I used to take the TAET participants to New Mexico and Arizona to show them large scale solar related projects. We were returning to Gainesville via Atlanta. The Atlanta airport was the hub of all flights going to or from Gainesville. Our flight to Gainesville was supposed to come from New York but because of bad weather in New York it was delayed. So every half an hour the flight timing at Eastern Airlines counter would be changed. This went on from 5:30 p.m. to 9.00 p.m. Meanwhile our request to meet a manager of Eastern Airlines (EA) was turned down.

Finally in a fit of desperation we informed the Eastern Airlines (EA) staff politely that in the morning they would see a story in the Atlanta Journal (local paper) about how 40 foreign dignitaries were stranded at the Atlanta airport because of the stupidity of Eastern Airlines. That made the EA promptly give us a hotel for night and book us on the morning flight. This crass commercialization of airlines industry

has become even worse today where in case of weather related delays the airlines do not offer anything to the passengers - not even food.

Just before leaving US in 1981 we had bought a \$ 300 airline ticket on Eastern Airlines. This ticket allowed us unlimited travel anywhere in the country for one month. We utilized this ticket fully and visited all our friends around US. Those were the golden days of air travel in US with excellent service and good food. Today the airlines are just like a glorified bus service with no food, hardly any service and quite often late and not on time.

In my 7 years' stay in US we traveled quite extensively all over the country and stayed with innumerable American and Indian families and enjoyed their gracious hospitality. Since then I have traveled to many more areas whenever I go to US. However few states in northwest still remain to be seen. It is my keen desire to see the natural beauty of America's northwest and hope that one day I will get an opportunity to do so.



View of LA from Hollywood hill,  
Summer 1976



Reitz Union,  
1976



Power Tower, Sandia Labs,  
June 1976



With solar energy pioneer John Yelliot,  
ASU, Tucson, Summer 1976



Two of us alone in the Greyhound bus from  
Pheonix to Tucson, 1976



With Gini Laurie and her family, St. Louis.,  
Summer 1976

## *Chapter 10*

# Graduate studies

The quality of teaching I encountered at UF in my first quarter was superior to that at IIT Kanpur. With the general atmosphere of scholarship together with my enthusiasm for learning made the graduate studies at UF quite an enjoyable experience. Though I had done my M.Tech from IITK the level of graduate studies and the general atmosphere for doing good research somehow was lacking in this premier institute. Even today the situation has not changed very much. In fact I repeated quite a number of graduate courses at UF that I had already taken in IITK but still learnt much more.

With the desire for learning becoming stronger I started spending long hours in the UF libraries. Reading journals and books on energy kindled a desire in me to broaden the scope of my work. Thus I started looking at the wider picture of energy and especially how nature used solar energy for different purposes. We were trying to build in our lab a solar tracker so that solar collectors could follow the sun for maximum interception of solar energy. Since sunflower tracks the sun in a rudimentary fashion, its knowledge, I thought might be useful in designing a better solar tracker.

Thus I went to the Botany department and talked with one of the professors and got the necessary literature regarding

the turgor pressure, which makes the sunflower follow the sun and other similar pressure related processes in green plants. Reading about this fascinating subject opened a whole new area of research for me and one thing led to another and I became extremely interested in how the trees take up water and transport it to great heights, how evaporation by the leaves takes place, etc. etc.

The most important thing this approach taught me was that nature knows best and through millions of years of evolution it has perfected the design and hence we should follow it. I also realized that it works at nearly room temperature and the efficiencies of energy conversion are very high. This is so since the energy available is less and in dilute forms and to produce worthwhile output nature has to develop extremely efficient energy transduction processes. This philosophy has guided me in all my design processes.

Similarly in our lab at UF we were trying to develop an infrared sensor for measuring radiation from solar collectors. Again I asked myself how nature senses temperature. I found out that the infrared sensors (IRS) of snakes like rattle snake, pit viper etc. are really fantastic systems with very high precision and they can sense a temperature difference of about  $0.01^{\circ}\text{C}$ . This is how they catch their prey based upon the temperature difference between the prey and its surroundings.

On both sunflower tracking and rattle snake receptors I gave seminars in the department sometime in 1976. These were probably some of the first seminars on biomimicry in the

department and helped me later on to set up the university-wide multidisciplinary seminars. Unfortunately I got side-tracked and did not proceed further on this line of research and even today after 30 years we still do not know very much about plant movements, water transport in them or IRS of snakes and how they can be used to design useful devices. Nevertheless biomimicry nowadays is the flavor of the month and very fascinating devices are being designed based on some of the natural systems.

For my Ph.D. work I decided to work on desalination of seawater. I do not remember how I chose this topic but once I had chosen it I again looked towards nature for inspiration.

In nature the seawater desalination takes place by its evaporation from sea surface by solar energy to form clouds which subsequently convert into rain. The process of rain formation is aided by lightening which helps in condensation of rain drops from very cold clouds. Thus I embarked on the study of seawater-air interface, how the solar energy is absorbed by the sea and finally how lightening affects rain-drop formation.

In order to understand these phenomena I took courses in electromagnetic field theory in electrical engineering, interfacial phenomena in chemical engineering and used to discuss cloud physics with one Dr. Uman a very famous electrical engineering professor at UF who was also one of the pioneers on lightening research in US and probably in the world.



These courses and discussions gave me some insight into the whole process of rain formation and so I decided to set up a couple of small experiments to duplicate the rain formation. In one experiment I set up a deep basin solar distillation unit with dyes added to water. This duplicated the interchange of solar energy with seawater since majority of solar energy is absorbed within one meter of the sea surface. The dyed water also allowed the solar radiation to be absorbed in a very thin top layer. This helped increase the surface temperature of water and hence the evaporation and resulted in increased output of solar still.

The second experiment I set up was in chemical engineering lab where I started looking at the role of surfactants in increasing the evaporation rate. Surfactants help in breaking the hydrogen bonds in surface water and hence can help in increased evaporation. I conjectured that the biological life at the sea surface maybe acting like surfactant and thus helping in increasing the evaporation rate. This conjecture is still being tested by various researchers including Craig Venter of the human genome fame. Later on I found out that Seawater Conversion Laboratory at University of California, Berkeley had done a fair amount of work on the role of surfactants in increasing the evaporation of seawater. That was one of the reasons to visit the lab in Berkeley in summer of 1976. So I felt I was on the right track.

The third experiment I set up was in the electrical engineering lab regarding the use of high DC voltage (~ 20-25 KV) for increasing the evaporation of water. The idea was to flip flop

the surface water molecules (to which a small amount of surfactant was added) by using high voltage and frequency so as to break their bonds and hence to increase the evaporation. Besides this also helped me to set up lightening discharges in a small solar still. We did see some increased evaporation of water when continuous lightening discharge took place in the still. Later on I discovered that Japanese had done some pioneering work in early 1970s on the use of electrical fields for enhancing water evaporation but since their papers were written in Japanese and appeared in Japanese journals it was not easy to find out what they had done.

I could set up these experiments in 1976 in all these labs because I had taken courses in these departments and the concerned professors were very helpful and appreciative of my efforts.

Hence for about 3-4 months I used to shuttle between these labs on daily basis. I would start experiments in one lab in the morning and would end up finishing another experiment in another lab very late at night. The thrill I felt in doing these experiments and thinking about them was almost like a yogic meditation and got a first hand experience of what inventors must have felt while working on cutting edge research. This feverish intellectual activity allowed my brain to flower like it had never done before. It increased heightened awareness of almost everything and allowed me to look at any problem very deeply. In between the experiments I would sit and write long essays on how the problems of India could be solved by the use of solar energy. In fact I col-

lated and condensed these writings later on and they were published in 1978 as a half page editorial article in Indian Express.

Dr. Farber, being an inventor himself appreciated my efforts and would come and watch these experiments with great curiosity in the lab. However some of my other committee members were not very appreciative. One of them told me that they need a Ph.D. from me and not a Nobel Prize! He almost gave me an ultimatum to choose one of the experiments for my Ph.D. He was actually helping me since he wanted me to finish my Ph.D. in short time and was afraid that with very innovative research in electric fields and surfactants it may take a very long time to do so. Since I was not very sure of the surfactant or the high voltage field projects, I chose the first project on the effect of dyes on solar distillation for my Ph.D.

Besides my Ph.D. topic I also did a lot of reading and researched the general field of sea water desalination.

Some of these researches also gave me a lot of publicity. There was a young lady at UF Darcy Meeker who was an Associated Press (AP) reporter besides being a part of UF publicity and information center. She somehow got a liking for what I was doing in energy. She therefore wrote about half a dozen stories on my work which were not only published in the local papers but also in national papers like Miami Herald, St. Petersburg Times, and Tampa Tribune etc. Often the AP stories were picked up by Indian press and appeared on the

front pages of Times of India and Indian Express. In fact two editorial articles in Times of India were written on these inventions. My parents would send me the newspaper clippings whenever they appeared. Quite a number of people informed me later on that I was probably the only Indian student in US to get so much publicity in Indian press in 1970s. Many people that I met in India in early 1980s remembered those stories.

The Indian press was very appreciative of the fact that an Indian student was trying to develop technologies which might help solve India's Energy Crisis! Some of these stories nevertheless were quite embarrassing because they were based only on my ideas and not on any hardware development. That is where I realized that America is a land of ideas where any good idea is immediately picked up by the press. And I was not lacking in ideas!

For example one day I saw a TV program on Public Broadcasting Services (PBS) channel on the beetle which collects dew on its backside in Namibian desert and uses that water to survive in the harsh atmosphere of the desert. Since I was working on the problem of water I immediately thought that dew should be an excellent source of fresh water production in desert areas. So I set up a full-scale experiment in our lab on dew collection and the factors affecting it and wrote a paper which was published in 1980 in the journal *Desalination* on large-scale dew collection using the data from this experiment. I am very proud of this work because today after about 27 years, dew collection is becoming an important

topic of research for fresh water production and my paper is quoted extensively by the researchers working in this area. This work also gave me good publicity and I was interviewed on the local TV channel in Gainesville in addition to the news being published in International papers. Similarly there were other stories written on my various technical papers that I published. Even when I was leaving UF to come to India, Darcy Meeker wrote a major story on how I was taking powerful ideas back home!

My Ph.D. work also gave me some publicity. I was very proud of this research where sophisticated mathematical modeling was used to validate the experimental results. Quite a number of industries later on used this simple technology of using dyes to enhance water evaporation by solar energy. I published a fairly long paper on it in the journal *Solar Energy* and it is quoted extensively by the solar distillation researchers.

In those times there were only mainframe computers in UF and other universities since the desk top computing had not yet arrived. Besides we used FORTRAN language for our computer programs. The program for my mathematical model was quite huge and took 10-15 minutes to run it. Thus I used to run it only after midnight since the computer charges were least during this time. After each run I would debug the program and again feed it into the computer. Feeding the program in those days was done through punched cards and since my program was quite big I had to carry it in a big box. Feeding and debugging was quite time consuming and

so quite a number of days I had to stay whole night in the computer center. In contrast the life of a graduate student nowadays is so easy since he or she has an access to high speed desktop computers!

During my graduate studies I also discovered an interesting ability in myself to go very deep into a subject - almost to the molecular level. This ability, which lasted for 5-6 months, was almost like a curse because any time I thought of an engineering problem, my mind would immediately go to the molecular level and that is not very good for engineering design. Nevertheless this ability gave me wonderful ideas on solar energy utilization for electricity generation. I wrote them up in my diary and am delighted to know that only recently have some of these devices been made since new non-linear optical materials have become available.

This ability made me very vain, gave me a false pride and an ego that I was a great inventor. So I would go to the library to do some more research in areas I had chosen and invariably found out that somebody else had already thought about the same idea. This obviously deflated the ego but also gave me a satisfaction that I was on the right path. Thus whenever somebody comes to me or makes a claim that he or she has done breakthrough research I always tell them to look carefully at the old literature since the chances of somebody else having thought about it long time back are very high. There is basically nothing new under the sun!

I also did a fair amount of travel during my graduate studies. For example I was invited by the American Association for the Advancement of Sciences (AAAS) to attend their annual meeting in Denver in 1977 and to participate as a panelist in a session on relevance of US education for foreign students. They had invited about 20 foreign graduate students from all over US to debate and evaluate the effectiveness of US graduate program for such students. I was the only one selected from UF. It was a prestigious competition and 20 of us from all the major universities in US were given \$200 each to travel to Denver. Besides our stay was arranged with local host families and we were given a complimentary registration for the conference.

Our foreign student session was acrimonious and reminded me of UN debates with practically everybody blaming the US university system for not teaching material relevant to the foreign student's country problems. Mine was the only voice telling them that we came to US on our own accord and so why should the US universities change their course of instruction to suit only foreign students. "We should be intelligent and bold enough to take knowledge from this education which will be useful in our own countries. We have to make that choice and not the US universities", I said. However my voice was drowned out by the very aggressive tone of a couple of leftist type students who found fault in everything American. Incidentally I found out later on that majority of the students who participated in this session and criticized American education settled down in US after their studies. I was probably the only one who went back!

There were two interesting incidents that took place during this conference. The first one was about a senior Indian scientist. He was invited by AAAS to present a paper on wind energy in one of the sessions and was offered air fare from India plus waiver of registration fees. In those days (1977) because of very strict foreign exchange regime in India he got only \$ 15-20 at the Delhi airport which was used up very rapidly in US. So he had no money to even have a meal since his money from AAAS was supposed to come after the conference was over. I sensed his predicament and fed him a couple of meals during the conference for which he was eternally grateful. In fact later on he retired as the head of a National Lab in Bangalore and always remembered my generosity.

The other incident took place in E.F. Schumacher's session. In those days E. F. Schumacher was a very famous economist from UK who achieved his fame because of his book called "Small is Beautiful". In this book Schumacher proposed the thesis of using Gandhian philosophy for development of small energy self-sufficient communities and systems as opposed to the existing large systems developed historically. The energy crisis of 1973 suddenly made Schumacher's thesis very popular. He was slated to give a lecture on his thesis in this session.

Thus he was a star attraction at the AAAS annual meeting in Denver and his session was a standing room crowd only. Because of Schumacher's popularity the organizers of the session had kept him as the last speaker on the program.



The speaker before him was from the US Academy of Science and just before he ended his speech he told the audience that he had brought around 40 copies of the book on Energy for Rural development that his office has published and put them on the table for the participants to take. He also informed the audience that this book is freely available from his office and would be sent to whosoever requested it. Despite that there was a mad rush to take the book and for the last book two gentlemen in 3 piece suit fought over it and tore the book in half! I saw no difference between the citizens of super-rich society and beggars fighting for some food on the road in a very poor society. Freebies elicit the same response from all human beings!

It was a 5 day conference and everyday I would call Nandini since she was staying alone in our apartment in Gainesville. One day when I called her she told me that somebody tried to open the door in our apartment at 5 a.m. in the morning. She was half asleep but kept on wondering why I would come so early in the morning from Denver. In any case she called the campus police but by the time they came the intruder had run away. In those times there was a lot of crime in Gainesville. In fact it had started being called the rape city of US.

In 1978 I was invited by the International Solar Energy Society (ISES) to their International Conference in New Delhi. Our lab had sent 4 papers for presentation and since Dr. Farber was unable to attend, I went to Delhi to present them.

This was also a great opportunity for me to go back to India after almost 3 years and so I jumped at the opportunity when it came in the form of an invitation by the Indian section of ISES. My uncle Dr. Atma Ram had become India's science and technology minister in 1977 in the ministry of Shri. Morarji Desai. ISES was holding the meeting in New Delhi after a lapse of 24 years (the last ISES conference had been held in Delhi in 1954) and Dr. Atma Ram was the patron of the conference. He had been following my career path at UF with great interest and since I was a student of Dr. Farber I was sent an invitation and a promise of partial air fare to attend the conference.

In late 1976 Dr. Farber had gone to India as the head of a high-powered US delegation in Solar Energy. He had met the Energy Minister Mr. K. C. Pant and other senior Government of India (GOI) energy officials. He also met my father who took him to meet Dr. Atma Ram who was leading a retired life at that time and Shri. Sunder Lal the senior Member of Parliament of Congress Party. I was told later on by my father that Dr. Farber praised me a lot to Dr. Atma Ram and thus when he became the science minister he suggested to ISES that I should be invited if Dr. Farber was not coming to the conference.

I found the conference quite dull with not too many new inventions and the focused more on rudimentary and simple solar devices which could be made easily by rural population. Since it was taking place in Delhi hence the participation of US and European scientists was somehow minimal. I

presented our four papers and must have made some impression because later on when I came back to India quite a number of solar energy researchers who were in those sessions remembered me.

This visit to India also gave me an opportunity to meet my in-laws for the first time. They took me to Phaltan from Mumbai (then Bombay) and showed me their set up. I hardly paid any attention to it since I was least concerned about it and was the last thing on my horizon. How wrong I was since this is the place I finally chose to settle down in! If I had an iota of intelligence I would have paid more attention to what my father-in-law was trying to tell me!

This was a whirlwind tour of India where I stayed for 15 days only. However when I returned back to New York on the Air India flight, I felt a sense of happiness at coming back to US as if I was coming home ! I was a little embarrassed by this feeling of mine since I always prided myself about the fact that I wanted to go back to India but felt this new feeling for the first time. It could either be because of the stark contrast that I found between the conditions in India and US, or the general gloomy feeling that I felt in the Indian intelligentsia that I met in Delhi despite the fact that the general elections had thrown out Mrs. Gandhi the dictator. Or it could be because I had my wife in US to whom I wanted to go back to as early as possible. Nonetheless this feeling of happiness of going back to US was very strong.

Still when I reached Gainesville I was bubbling with enthusiasm regarding what was possible for India. I do not remember now but Nandini later on told me that I talked non-stop for almost two days about the Indian trip and the excitement I felt.

Just after my return to Gainesville one of the top energy officials of the Government of India (GOI) came to see our solar lab and to meet Dr. Farber. I had met him in Delhi during the ISES conference. I had made reservations for him to stay for two days in the Reitz Union guesthouse at \$ 15 per night. However he wanted to save the money and insisted on staying with us.

We used to live in a married student apartment with only one bedroom and a combined kitchen and living room. This high ranking GOI official therefore slept for two days on the floor in our living room! It was really pathetic how some of these people behaved for saving few dollars when the GOI was providing all the money for their travel and stay. Later on whenever I met this official in Delhi and alluded to the subject of how he stayed with us he would squirm and feel extremely embarrassed.

From the time I came back from India till I finished my Ph.D. there was a period of almost one year. This was also one of my most productive year. I wrote extensively on a variety of subjects and was quite active in developing various projects though my Ph.D. work took a major portion of my time.

During this time I also somehow became interested in gravity and so read a lot on it.

One day sometime in fall of 1978 I was coming back to my office from my apartment after lunch when a thought suddenly came to me that human thought and gravity have similar characteristics. The thought came with tremendous force and for next 3-4 months I immersed myself in this subject. Dr. Farber was alarmed to see this diversion and warned me that I would not be able to finish my Ph.D. if I diverted my energies to this long-term venture. I heeded his advice and finished my Ph.D. by March 1979. Nevertheless this powerful thought of human thought/gravity interaction propelled me to start my quest for spirituality which I had abandoned for almost 13 years. This quest for spirituality has continued even today and has resulted in a book published in 2004. But then that is a different story!

My Ph.D. defense took place in March 1979. I wore a simple shirt and pants. Some of my committee members remarked why I was not dressed up in a formal attire of suit. I told them that they should be more interested in listening to my presentation and not focus on what I wore! My arrogance knew no bounds! I also never went to the graduation ceremony in June 1979 since neither I nor my professor was fond of the pompous ceremony.

I was lucky that Dr. Farber never interfered in my thesis work. I had selected my topic and followed it up till its defense with minimum help either from him or other committee

members. I think Dr. Farber also liked my independent nature and in fact was very pleasantly surprised at the amount and quality of work I had done when he read my thesis for the first time. I was therefore glad that I followed my hunch of not going to any other school but sticking with UF.

Dr. Farber was a difficult person to work with. Yet he was a great engineer and innovator and I learnt a lot from him. I have always believed that one should try to take the good things from a person; the negative attributes are his or her own baggage. If we focus on their negative attributes then we also acquire a part of that baggage. It is not easy to follow this philosophy but if done then it results in tremendous knowledge gain.

The four and a half years that I spent in doing my graduate work at UF were some of the happiest years of my life. The tremendous intellectual activity that took place without any responsibilities or worries gave me immense pleasure.

## *Chapter 11*

# Teaching at UF

Sometime in December 1978 when I was in the final stages of my Ph.D. it was rumored that Dr. Farber was going to get a very big contract from USAID to set up a center to teach alternative energy technologies to scientists and engineers from developing countries. This center was subsequently named Training in Alternative Energy Technologies (TAET).

An USAID team from Washington DC had visited our lab and the department and was shown all the facilities. I was specially invited to meet them and discuss with them about the inter-disciplinary seminars that I had set up. Apparently the team had reservations about giving the center to UF since they felt that Dr. Farber would only stress the solar thermal aspects of alternative energy. Hence they were told that I would be one of the main instructors in the program and since I had set up these seminars, every aspect of renewable energy would be covered. In addition being from India I was supposed to have developing country perspective! These arguments and sales pitch by the University was probably bought by the team and we were informed sometime around June-end of 1979 that we had a very strong possibility of getting the center. This was a \$ 2.5 million project for 5 years and in those times was one of the biggest single project in Mechanical Engineering.

During the Carter Presidency, USAID felt the need for setting up such a center in US which would give hands-on training in renewable energies to top energy planners and government officials of developing countries. Apparently quite a few of the top universities like Cornell, Berkeley etc. were in competition to get this center. Hence it was a feather in Dr. Farber's cap to get it for UF.

So when the project was sanctioned in September 1979, Dr. Farber decided that I should be hired as one of the instructors in this center and hence I was taken on board. In a couple of months two more instructors were hired and hence we had a full team of 4 instructors (including Dr. Farber) and 4 office staff. It was also decided to shift TAET to an off campus facility called TREEO center. TREEO which was located almost 10 miles from the main UF campus was a brand new swanky facility for holding workshops, seminars and training courses.

One of the instructors hired was Inky Laketek. Inky had worked in NASA and was taken as a lab instructor. He was obese weighing almost 325 pounds and loved to eat. We had couple of hilarious incidents in restaurants. One day we went to a Pizza Hut in Gainesville for lunch. Inky ordered a thick crust super medium sized pizza. The waitress turned to me and asked me what I would like to drink! I told her that I have not even ordered yet. She was incredulous and said, "You mean to say that he is going to eat all that pizza himself"!



We must have sampled some of the best restaurants not only in Gainesville but in all other cities, wherever we took the TAET participants - courtesy Inky. Before visiting any city he would get the magazines of that city and studied very thoroughly its eating places. He could eat a huge steak within minutes!

In 1984 he visited us in Phaltan. We had just moved into our new house and there were hardly any places in town for a good meal. So the poor guy had to survive for a week on a strict vegetarian diet in our house. All his pants became loose! He wanted to see Phaltan so I got him a bicycle since I did not have any car. He rode the bicycle all over town. In those times there was a circus playing in town so according to Inky there were many more people who came to see him ride a bicycle than to see the circus! Besides when he came back the bicycle was all bent out of shape because of his weight!

While in Phaltan he tasted Alphonso mangoes and loved them. So when he went back to US he took one dozen mangoes. Obviously at the customs in the New York airport he was stopped and told to destroy them. So he calmly sat on a bench and ate all one dozen mangoes! He was a real jolly fellow and unfortunately died of cancer in 1998.

Even before I was hired for TAET I was doing some teaching and used to enjoy it. I was a graduate assistant to Dr. Farber so anytime he went out of town – which he did quite regularly – I used to teach most of his classes.

I guess students liked my teaching because at one time they went to the Chairman of the Mechanical engineering department and requested him that I should teach a separate course on energy and specially related to biomimicry. The Chairman told them “Anil is still a student so how can he teach a separate course!” Nevertheless my occasional teaching must have made quite an impression on some of the students since even after 30 years I got an e-mail from one of the American student who after locating me thanked me and wrote how my teaching helped and inspired him!

Since I was put on the staff of UF, my visa status had to be changed from student (F-1) to either green card or H-1. I was opposed to the idea of getting a green card since I thought that once I got it I would never go back to India and thus I had a mental block against getting it. The UF administration was very surprised by my decision. Normally people were ready to give an arm or a leg to get a green card and here I was refusing it when I had an opportunity to get it. But then I have always been a foolish and arrogant person!

Hence UF administration did the necessary paper work for H-1 visa rather than the Green Card. After that they arranged for my interview with the immigration official in Jacksonville to convert my student F-1 visa to H-1. I was also warned that the immigration officer at Jacksonville was a very obnoxious and rude person. So on the appointed day I took the bus from Gainesville and reached the immigration office for the afternoon interview.

As per his reputation the immigration officer, one Mr. Carlyle, was extremely rude and he started the interview with a nasty remark that the UF must have already started the process of getting a green card for me so applying for H-1 visa was just a ruse. I immediately told him "Mr. Carlyle I have no desire to stay in this beautiful country of yours and before we start this interview I would like to inform you of a couple of things. Firstly my wife was a US citizen and she renounced it. If she does decide to take her citizenship back I will automatically become a US resident. Secondly I will be working in a USAID-sponsored project and have been told that if I need a green card then Washington will help me in getting it and thirdly if I wanted a green card in the first place then the University would have applied for it rather than for the H-1 visa. So now you can ask me all the questions you want".

He was quite taken aback by my remarks since in such circumstances the applicants are generally very polite, subservient and try to keep the immigration officer in good humor. Mr. Carlyle told me that in his long civil service he had not come across a person like me and for the next 45 minutes we had a very pleasant discussion on UF football! The next day the UF officials asked me what I had done to charm that character! Apparently they had contacted him and he spoke in glowing terms about me. I was immediately given an H-1 visa. Just before I finally left for India in 1981 I again called Mr. Carlyle and informed him about my exact date of departure to India. He was quite apologetic about the interview exchange and said that US would be better off by having people like me stay there!

Before the TAET project which started officially in September 1979, I was hired as a postdoc in the department. Thus four to five months from the time of my Ph.D. defense to the start of my TAET assignment were hectic months with traveling, setting up the solar house in UF and starting the dew condensation experiment.

So in the summer break of 1979 I took my father-in-law, who was visiting us, to Fort Collins, Colorado for a conference. We drove from Gainesville all the way to Denver and back in almost 10 days. On one of the days I drove nearly 1000 miles! Driving in US was a very pleasurable experience and with very low gasoline prices it was also very economic. One could hire a medium-sized car with unlimited mileage for \$ 30/day in those days.

During this trip I also visited Solar Energy Research Institute (SERI) as it was called in those days. The name was later changed to National Renewable Energy Laboratory (NREL) and nowadays one has to get a special permission to visit the lab. In those days it was very easy to visit most of the national labs and discuss with various scientists about their energy projects. There were hardly any restrictions which unfortunately came during the Reagan era.

I visited the thermal sciences section of SERI and since the lab had just started in late 1977 they were also scouting for staff. Thus the concerned scientist took me to the deputy director of the lab. We chatted for quite some time and suddenly he offered me a job at SERI. In that short time some-

how he got a liking for me and even showed me my parking space in the parking lot! I politely declined the offer telling him that I was going to teach in the newly formed TAET center at UF and then go back to India in a couple of years. The SERI deputy director was sorry to hear about my plans and told me that a research position at SERI was any day better than teaching at TAET! "If any time you feel suffocated at UF, call me and we will take you in SERI", he said.

In fact during that trip I was also offered a teaching position at the Colorado State University in Fort Collins to work with Dr. Lof, another solar energy pioneer. Getting my Ph.D. under Dr. Farber was also a plus point in all these job offers. The best part was that they came without my asking. In fact just after I had finished my Ph.D. I was also offered a good position in the world famous Bell Labs, since one of the senior managers at the labs had sometime back done his Ph.D. in Mechanical Engineering from UF. In those days getting a job after Ph.D. in renewable energy area was quite easy and I am sure I could have gotten a good teaching position in any University if I had chosen to do so.

However I was quite certain of going back to India and felt that TAET experience of teaching scientists and engineers from developing countries will be the best "post-doc" for me.

Since we were getting the TAET center, we decided to consolidate at one place all the solar energy equipment and projects that were scattered all over UF campus. It was also

felt that with this big grant the solar energy work at UF will expand further and hence we decided to set up a Solar Energy park. A 23-acre facility was provided by UF just off campus to house it. Consequently I and one of the graduate students in our solar group were given this task of setting up a Solar House and equipment in this park.

Thus we set up a solar house which was heated and cooled by solar energy and also laid a fairly large sized concrete slab to display other solar energy equipment. The Solar House was originally set up by Dr. Farber in Gainesville in early 1970s and was the first house in US to be completely air conditioned by solar energy. It was located in a part of Gainesville close to a major road and when the road was converted to a 4-lane highway the house was shifted to Energy Park. Because of its importance it was declared a National landmark building in 2003 by the American Society of Mechanical Engineers (ASME).

So both of us laid fifty feet by thirty feet concrete slab for displaying the solar equipment. Besides we set up the solar collectors on the roof of the solar house, welded all the pipes and did all the plumbing for solar heating and cooling. This exercise took nearly 2 months. I learnt a great deal about using earthmoving equipment for laying the concrete, welding copper tubing (welded about 1500 joints) and general hardware of plumbing and solar systems. This hands-on work experience was a tradition in our lab and one of the main reasons for my coming to UF. Unfortunately this type of training is getting scarcer and nowadays most of the

graduate students simply graduate without dirtying their hands. In fact all my Ph.D. experiments were designed and fabricated by me and other graduate students in our lab used to do the same for their experiments.

This practical training not only helped me to teach the TAET participants about hardware but also helped me in setting up my lab when I came back to Phaltan in Maharashtra. It was as if I was being prepared to return to rural India.

During this time a funny incident took place. A three member high-powered Chinese delegation came to see our Solar Energy Lab. Most of the time when foreign delegations came to visit our lab, Dr. Farber used to ask me to show them around. Since our lab was world famous, lots of foreign delegations came and I was always glad when asked to take them around. Dr. Farber somehow never felt happy in meeting the Asian delegations!

The head of the Chinese delegation was one Mr. Wu who was also a politburo member of the Chinese Communist Party. He spoke good English and told me that he did his Masters in Mechanical Engineering from California Institute of Technology (Caltech) in 1949. The other two solar energy researchers feigned not to know any English though in a slip up later on, they were also observed to speak good English. In fact I found all of them quite devious.

The day they arrived at our lab was the same day when US and China established embassies in their respective capitals and so there was quite a lot of photo-op on the campus.

Initially Mr. Wu was quite reserved since he did not expect an Indian to show him around but very soon warmed up to me when I told him about my father's very indirect connection with Mao and Zou Enlai !

One of the persons in jail with my father during the 1942 freedom struggle was Dr. Madan Atal. He was the uncle of Pandit Jawaharlal Nehru, India's first Prime Minister. Dr. Atal became very fond of my father and as he was an excellent cook he also taught my father to cook some well-known Kashmiri dishes.

During Mao's long march in 1930s Dr. Atal had visited China and had given medical treatment to both Mao and Zou Enlai when they were critically ill for which they became eternally grateful to him. He therefore became their very close personal friend. I was told that there was a bust of Dr. Atal in Tiananmen Square in Beijing. I still remember that in early 1960s when the relations between India and China deteriorated, as a last resort Prime Minister Nehru sent Dr. Atal to plead with Mao and Zou Enlai. Dr. Atal was treated very well but both of them were unmoved. In fact when he came back to Lucknow after this trip he gave my father a small packet of green tea that Mao had given him as a present!



As Mr. Wu became friendlier towards me he started telling me how Chinese remained backward in technology because of the “Gang of Four” alluding to the four leaders (including Mao’s wife) who had plotted against Deng Xiaoping. This reference to Gang of Four became a constant refrain of Mr. Wu’s during the day. I tried telling him that he was nearly 10,000 miles away from China and so did not have to parrot the official line about Gang of Four! But I guess the remnants of the communist rule were still very much in existence and so everybody in the delegation was spying on each other! What also surprised me most was that though Mr. Wu was a politburo member and hence must have been close to Mao and the Chinese leadership he had suddenly changed his colors after the change of guard and was spouting the new party mantra of economic liberalization of Mr. Deng.

As I was showing them around our lab, I saw from the corner of my eye that one of them was pocketing a small piece of insulation used in solar collectors. So I took a 1 sq. ft. panel of the insulation and gave it to them telling them that it was a present from the UF solar lab! All of them became extremely red in face and mumbled an apology. That is when the other two also spoke excellent English!

I again saw Mr. Wu during the International Solar Energy Society (ISES) conference in Atlanta in June 1979. By this time Americans were falling all over themselves to curry favors from the Chinese, since China was the flavor of the month. So there was a special session in ISES to hear Mr. Wu who was to give a talk on the Chinese efforts in solar energy

research. He read his speech and refused to answer any questions citing difficulty in spoken English! I knew very well that he spoke excellent English and was capable of answering any question.

After his talk was the lunch break and since so many people were crowding around him I decided to see him later on. After an hour I suddenly saw him – the politburo member of the Communist Party of China – carrying in one hand a McDonald hamburger and in another a can of coke, the two ultimate symbols of capitalist society! What an irony and what a sight it was! This irony was not lost on Mr. Wu either because when I wanted to photograph him he became red in face and vehemently opposed it. I wondered what Mao must have been thinking in his grave about his loyal cadre member!

From September 1979 to January 1980 we had to develop the course material for TAET and also set up the lab and experiments. The onus of doing all this mostly fell on me partly because a substantial part of TAET program was based on imparting instruction by external lecturers – a majority of whom I already knew and when invited they came readily. Quite a few of these lecturers were distinguished UF professors that I used to invite for the multidisciplinary seminars. Besides I was also in tune with Dr. Farber's philosophy and hence knew what teaching material to develop.

Aside from writing the course program and timetable I used to also spend almost 8-10 hours per day on the phone

ordering equipment for our lab and discussing with, requesting and cajoling energy experts from all over US to come and lecture to our participants. It was not very difficult in those times to get these experts to come and lecture since I knew most of them and also the fact that our Solar program was very well known. Also we gave them to and fro air fare, plus an honorarium of \$ 200/lecture and an overnight hotel accommodation. Thus we were able to get some of the world renowned experts to lecture in TAET program and these lectures/seminars – an extension of my department's multidisciplinary seminars, were always rated as the most popular aspect of our course.

We also set up a first class renewable energy lab within a short period of 4 months and after spending close to \$ 400,000. That is where I realized the power of things happening in US where with sufficient money one could buy almost any equipment and set up facilities in a very short time. I had never done anything like this in India so could not compare at that time but later on when I came back to India in 1981 I realized how difficult it was to get any decent equipment and even if one could get it, it took an inordinately long time for its delivery.

I also believed that the success of TAET would largely depend on the selection of the participants. Though USAID would pressurize us sometimes in taking some of the participants because of political reasons, we developed application forms on the lines of applications for graduate students applying to any good US university. Thus not only did they

have to send their detailed biodata, but also enclose a statement of purpose on why this course would be important to them and also three letters of recommendation from professional people. This application format more or less got us good participants.

Quite a number of participants we got were very senior government officials from 40 odd developing countries and some of them were even advisors to their Presidents or Prime Ministers. Hence they complained about filling such applications but we stuck to our guns and thus got a good number of participants who could understand the heavy dosages of course work that we dished out to them.

Since we expected them to do work with their hands quite a number of them revolted (especially participants from African countries) since they were big bosses in their own countries and not used to doing such work! Some of them bitterly complained both to Dr. Farber and to USAID that they were not college students to be told to weld solar collectors! Nevertheless majority of times the very same participants were thankful to us near the end of the course for this hands-on opportunity and told us that they had better understanding of renewable energy after the course and so could make an objective and proper choice for their country.

Teaching in TAET was a very rewarding but at the same time a very frustrating experience. Rewarding from the point of view of getting satisfaction of imparting education to elite of developing countries so that they became better informed

and could make a better choice regarding renewables. Also I made many new friends in these countries. Later on whenever I visited some of those countries I was treated with great respect and showered with their hospitality. Some of these friendships have continued even today. I also learnt first hand the problems of energy in most of these developing countries and this knowledge came very handy when I set up my own energy work in rural India. Besides the interactions I had with other renewable energy experts who came to lecture at TAET was really very educational.

The experience was also sometimes frustrating because in every batch (each batch consisted of about 30-35 participants and the session lasted for 4 months) there were quite a few participants who had a very bad attitude and they were least interested in learning anything. They just wanted to come to US and enjoy good life and quite a few of them tried to remain in US to do their graduate studies and why not since everything was paid for them!

To my knowledge this was the only training program in US at that time which paid completely the air fare of all the participants from their country to Gainesville, put them in very comfortable hotel rooms with a kitchenette and also paid each a small stipend for 4 months to take care of their food ! I do not think any such program which gave a paid holiday to foreigners existed even later on! After a couple of years USAID became wiser and stopped paying the air fare altogether.

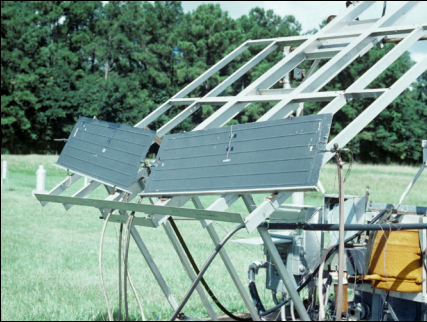
The participants with the wrong attitude or the bad apples, as I used to call them, vitiated the atmosphere and created problems for other participants. Unfortunately the hotel in which we used to house them in Gainesville was opposite a bar. Thus many a times these participants, who were important people in their own countries with some of them having white diplomatic passports, got into trouble after drinking in that bar. One day early in the morning we received a phone call from the Gainesville Police that they had one of our participants in the lockup since he created a scene in the bar and was also groping the bar girls ! We quietly got him released before the press got a whiff because he was the advisor to the President of one of the African countries!

In fact I found out that quite a few of them behaved in an extremely shameful manner unbecoming of the high positions that they held. Quite a number of times our office secretaries complained that some of them even groped them during the class sessions as if the white passport gave them a license to do so!

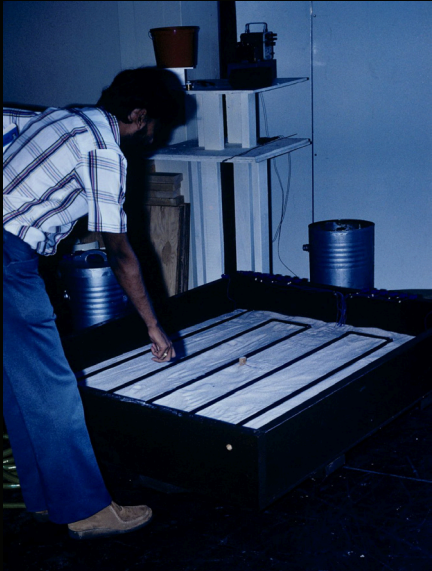
Another frustration I had was that I got completely cut off from the campus since my office in TREEO center was 10 miles away and during the sessions I would spend almost 12 hours a day in TAET starting at 7 a.m. in the morning. Thus the intellectual environment of the University life stopped completely for me and I felt that as very suffocating. The discussion with the peers or the equals and the attendance at seminars or going to the library therefore became very difficult. Besides I could hardly do any research

since most of my time went in teaching and supervising the participants. Thus the choice before me was to either get a University or research appointment in US or go back to India. Since I had already decided to go back, I had told Dr. Farber that I would not be staying beyond June 1981.

After the first session there was an evaluation of the program by USAID. The main person Mr. Alan Jacobs, who was a very senior bureaucrat in Washington and who also used to sit on President Carter's Security Council came to see and discuss the program with us. He was accompanied by Mr. Bill Eilers the Director of Energy Office in USAID. During the meeting any time Mr. Jacobs or Eilers asked a question, I answered it because the whole program was designed by me. Mr. Jacobs was quite annoyed by that because I was not the director of the center. In any case he realized my contribution to the program and I think he appreciated it also. In fact the staff at TAET used to joke that not a blade of grass moved without Anil's permission! The evaluation team was also unhappy by the fact that I would be leaving by June 1981, since almost all the participants gave a glowing report about my teaching and interactions with them.



Dew condensation experimental setup,  
UF lab, October 1979



TAET lab experiments,  
August 1980



Agronomy conference group at Fort Collins;  
Nandini's father, B.V. Nimbkar on the far left,  
1979



TREEO Lab captured from plane,  
October 1979



TAET first seminar participants;  
Inky is on far right, April 1980



## *Chapter 12*

# **Decision to Go Back to India**

I was always certain about going back to India but when it would happen and where I would work was not certain. Teaching in TAET made my decision easier since I wanted to get out of it as soon as possible. I was getting suffocated because of lack of research work. Besides Nandini was also finishing her Ph.D. in Agronomy by June 1981 and so we had to make a decision one way or the other by that time.

Thus I decided to visit India for 25 days in November/December of 1980 and hoped to locate a suitable place where I might work. My father-in-law also helped me in deciding where to go since I was not aware of some of the places that we visited later on.

Thus together with my brother and father-in-law I visited cities of Mumbai, Baroda, Ahmedabad, Hyderabad, Bangalore, Pondicherry, Chennai and Phaltan. From Phaltan I and my brother then went to Lucknow and Delhi. In most of these places I visited various research establishments and institutes working in renewable energy. Besides seeing what work they were doing we also discussed with the staff and other people the working conditions and other matters since I was scouting for a place where I might work.

Moreover this trip was also like a “Bharat Darshan” where fleetingly I saw India and its myriad problems.

Thus in Baroda I visited Jyoti Ltd. a company involved in developing renewable energy devices while in Ahmedabad we visited one of the largest Eucalyptus plantations in India. Visiting Ahmedabad also provided me a chance to see for the first time Gandhiji’s Sabarmati Ashram. It was in quite a poor condition next to the stinking Sabarmati river – a far cry from the days when Gandhiji gave the call for Dandi March from here and this was also the place where people from all over the world came to.

In Mumbai I gave a talk at IIT Bombay after which they started the process of hiring me as an assistant professor. They sent me a firm offer in March 1980. I was going to be paid a salary of Rs. 1,750 p.m. with a promise of faculty quarters later on. Initially I was supposed to stay in a one room guest house.

In Mumbai I also met Mr. Darbari Seth one of the key associates of Mr. J.R.D. Tata. Mr. Seth besides being a close business associate of Mr. Tata was the Chairman of Tata Chemicals and hence a big Tata honcho. After finishing my Ph.D. I had written a five page letter to Mr. Seth about some of my ideas regarding India’s energy program and a request for a job since I wanted to come and work in India. He immediately replied and wrote to me that in my next trip to India I should see him.

I had no idea who Mr. Seth was. I had written to him on the advice of one Dr. R. L. Dutta who was in 1979 the President of International Solar Energy Society (ISES) and whom I had met in Atlanta ISES conference. However when I was in Mumbai I enquired about Mr. Seth and came to know that he was one of the leading industrialists of India.

Mr. Seth was very cordial and since he was scouting for key people for his newly formed Tata Energy Research Institute he got a couple of his colleagues to sit in the meeting. He told me that he really liked my letter and remarked that it reminded him of a similar letter written long time back by Dr. Homi Bhabha to Mr. J. R. D. Tata regarding starting of Tata Institute of Fundamental Research (TIFR)! I did not understand the import of that remark but later on when I found out more about Dr. Bhabha and TIFR I was really thrilled that Mr. Seth would give me such a compliment.

Within 10-15 minutes of our meeting, Mr. Darbari Seth started calling me *beta* and told me that a very big job was waiting for me at the Tatas if I do decide to work with them. But probably in my fit of arrogance I told him that I would like to work in rural India. Still he suggested that Tatas could help me in that endeavor. Later on I was told that had I wanted there was a strong possibility of my getting the directorship of Tata Energy Research Institute.

In Mumbai I also had dinner with the late Piloo Mody, the founder President of Swatantra Party and a very illustrious Member of Parliament. Mr. Mody, a rotund man with a very

jolly temperament, asked me to join his party and told me that the future of people like me is in politics rather than rural development! He regaled me with the stories of Zulfikar Ali Bhutto the former Prime Minister of Pakistan. Piloo and Bhutto were roommates in Berkeley during their student days.

In Hyderabad I visited ICRISAT and the R&D Center of BHEL. Sometime in 1980 BHEL had sent me a job offer in their R&D center. I therefore used this opportunity to find out a little more about them. One of the key officials in the R&D center was one of my IITK classmates. Most of the R&D officials who were working in renewable energy field had heard about me because of several stories which had come in the press.

My classmate was incredulous when I told him that I would like to come back and work in BHEL! He said that I was mad since almost everybody wanted to get out and go to US and when I had an excellent job there why did I want to come back? This was the general comment I heard in every organization I went to. In those days hardly anybody ever came back to India. It is only recently that the IT sector has started attracting a sizable number of NRIs to come back.

In any case I found the atmosphere at BHEL quite bleak and my classmate emphatically told me never to join the organization because there was too much politics and which project you worked on depended on the whim of the top boss.

I heard similar stories even in leading institutes like IIT Bombay and IISc Bangalore. In Bangalore I went to see Dr. Amulya Reddy's lab on rural technology. The work did not appear to be very great but his lab used to get tremendous publicity in UK and US. I had written to him a letter similar to the one that I wrote to Shri. Darbari Seth, but Dr. Reddy never replied to it. He did not even show the courtesy of acknowledging its receipt. Besides much later on when I met him and told him about the letter he said that he never replied to letters! I had never met a more arrogant person before in my life. In US even the Nobel Laureates had the courtesy of at least acknowledging the receipt of letters.

However other staff members at IISc told me that if I wanted to join the Institute then I would be most welcome. Nevertheless I was also aware of the politics associated which such institutes though in all fairness IISc has fared much better than other such institutes in India.

This was my second visit to Bangalore, the first being in 1971. It was a beautiful city with broad tree-lined roads, tremendous greenery and hardly any traffic. Today it is one of the most polluted cities in India with traffic jams a regular feature and high rise buildings replacing trees!

In Chennai we visited the Murugappa Chettiar Research Center (MERC) which was being run by my former IITK professor Dr. C.V. Sheshadri. I had selected one of his scientists to TAET program and though Dr. Sheshadri was not in town the TAET participant showed us around. We found that they

were doing quite interesting work applicable for rural areas and there was freedom for the scientists to do research. My father-in-law suggested that a similar set up can be started in Phaltan where he was already running a very small institute called Nimbkar Agricultural Research Institute (NARI). This was the genesis of my thought process which ultimately culminated in my joining NARI when I came back to India in September 1981.

From Chennai we went to Pondicherry where we visited Aurobindo's ashram and saw his room and the place from where he used to preach. The environment of the ashram was very quiet and peaceful. Besides we enjoyed our stay at the Pondicherry beach.

An interesting incident happened when we returned from Pondicherry to Chennai. We traveled by a state transport bus and got down close to the five star hotel where our stay was booked. It was pouring when we got down from the bus so we took 2 cycle rickshaws to take us and our luggage to the hotel. After a great difficulty the sentry of the hotel allowed the rickshaw puller to take us inside the hotel compound. It was an unheard of thing for a rickshaw to go inside the compound of a 5 star hotel since it was normally frequented by people with cars.

I was quite upset by the treatment meted out by the hotel staff to the poor rickshaw puller for no fault of his. So I decided to take him for tea with me in the hotel restaurant. The rickshaw puller refused to go inside the hotel as he was

deathly afraid. Despite my pleading and telling him that he should not be afraid since I was with him, he refused to come telling me that the hotel staff would harass him later on. It reminded me of what my father once had told me that during the British Raj whenever a white man walked on the footpath the natives would get down on the road because of fear. The British were somehow replaced by the rich in independent India!

Our last stop was Phaltan from where I and my brother went to Lucknow to see my parents and then to Delhi to take the flight back to US. As we were coming to Phaltan by train I decided to take a ride in the engine. In 1980 there were steam engines still in use in this part of the country. It was my childhood dream to ride a steam engine. So I went and talked to the engine driver. He was thrilled to give a ride to a US university professor! So I and my brother rode about 50 km in the steam engine. The technology of the engine had not changed since early 1900s when they were introduced on large scale in India. Somehow that steam engine reminded me of the situation in India where we were still in the stone ages because of the socialist thinking propagated by the political leadership.

In Phaltan I spent a couple of days at my in-laws and there my father-in-law told me that if I decide to come back then I could run NARI in whatever way I wanted. By this time I had also decided that it would be much better to do something on my own, no matter how small it was, than to get a job. The offer of running NARI was therefore quite tempting

and so I decided to take a plunge. It was a different matter that he reneged on his promise later on!

So without seeing the place where I would be working or the facilities available I took the decision to start my career in a very rural setting where I knew neither the local language nor the milieu! I still shudder today at the thought of my actions and do believe that I really showed the true entrepreneurial skill of jumping first and then trying to find out where I have jumped!

In Lucknow I was interviewed by the newspaper National Herald. I was pleasantly surprised to see that a couple of days later a half page interview of mine with my photograph was published in it. It elicited very good response since people were amazed that I was thinking of coming back. Shri. H. N. Bahuguna—a close friend of my father's and one of the major opposition political leaders of India read it and informed my father that he would like to meet me. Thus I had a long meeting with him in New Delhi. I found him to be a very intelligent and articulate leader. Even later on many times whenever I met him in Delhi we used to have long discussions on energy matters! He once told me that if he became the Prime Minister he would like to make me his energy minister!

However meeting other intellectuals like George Varghese who later on became the Editor of Indian Express and some senior members of Mrs. Gandhi's congress party gave me a feeling of gloom, but I felt that they were old and hence liv-



ing in the past and thus pessimistic. I was unperturbed by all these and had firmed up my plans of coming back to Phaltan to run my own small set up. As they say in Sanskrit “Vinash Kale Vipareet Buddhi” meaning that before a person’s downfall his intelligence and ability to make proper decisions fail. I was following it perfectly!

After 25 days I returned to Gainesville and told the news to Nandini. Naturally she was thrilled that she would be able to go back to her home town Phaltan, but was not sure if I had made the right decision. But I was quite enthusiastic about it.

The day I reached Gainesville Dr. Farber immediately called me and asked me about my decision and when I told him that I was going back he was quite crestfallen and said “I hope you are making the right decision”. He obviously did not like my decision and so probably informed Mr. Alan Jacobs in Washington. Mr. Jacobs flew to Gainesville sometime in February ostensibly to discuss about the progress of TAET, but I guess his main agenda was to dissuade me from going back to India.

So Mr. Jacobs came into my office and tried to dissuade me from going back. He sat in my office for nearly four hours discussing various issues and told me that I was committing hara-kiri in going back. “I have been to India many times and have seen the conditions. When everybody in the world is coming to US, I really find it strange that you are going back and specially from a good place like Gainesville”, he

said. "You know with my clout in Washington I can get you a green card in a second and can even put the issue of US citizenship on a fast track", he informed me. "All these issues can be taken care of. You are extremely important to the success of the TAET program and we would not like to lose you" he told me almost pleading with me.

After about 4 hours I told him "Mr. Jacobs I was not born in US so I cannot become the President of US but I can become the Prime Minister of India! Isn't it enough reason for me to go back!". "Oh so you have political ambitions" he remarked. I said "No that is beside the point. India is my own country and I would like to go back and try to do something worthwhile with the knowledge I have gained in US". I had become so arrogant that any voice of reason was immediately shut out. I was a shining example of "Vinash Kale Vipareet Buddhi".

Mr. Jacobs was not convinced or happy with my decision. "Are you coming to Washington anytime soon" he asked. "Yes I do have plans to go to Washington to see some of my friends before I leave US" I said. "Come and see us. Maybe you can change your mind about going back to India", he said while leaving.

After this discussion I am sure he briefed Dr. Farber because again Farber called me to ask my final decision and when he found out that I was not going to budge he decided to search for my replacement.

So I framed the necessary advertisement and also interviewed the candidates. I thought that was the right thing to do. Most of the candidates thought it odd that I was interviewing them to replace me! This is what I have always tried to tell my staff at NARI but very rarely has it ever happened that somebody who is leaving will help in finding their substitute.

Just before I resigned from TAET in June 1981 I got an opportunity to visit Egypt as a consultant. One of the TAET external lecturers was a staff member from Volunteers in Technical Assistance (VITA), an NGO based in Washington D.C. They used to do quite a lot of work for USAID in different countries. The lecturer had come to Gainesville on our invitation and wanted me to go to Egypt to evaluate their national kerosene cooking program.

I accepted the offer on one condition that I should be given two days off to see the pyramids and the Cairo museum. This was agreed to and I enjoyed my one-week stay in Cairo as a guest of the National Petroleum Research Center evaluating their kerosene cooking project. All of the former TAET participants from Egypt got together in Cairo and showed me the pyramids and the Cairo museum.

I also saw the poverty and corruption in Egypt which was similar to that in India and witnessed the seething anger beneath the surface against President Anwar Sadat. The TAET participants informed me that there was a tremendous rise in Muslim fundamentalism in Egypt and their anger was directed towards US. Since Anwar Sadat was perceived as

an agent of US hence it was directed towards him. Just 6 months after my visit President Sadat was assassinated by his own security guards.

During the Egyptian visit the first strike of Airport Controllers in US took place, so all the air traffic was disrupted. I got caught in this disruption and so my flights to and from London were cancelled. The Pan American Airlines put me up in a hotel in London and this gave me an opportunity to see the city. I saw the famous London Museum and also went to meet the Editor of New Scientist the famous science journal. He had given me an invitation to visit him quite sometime back. He took me to lunch in a Gujarati Restaurant in the center of London. I told him that I did not need to eat Indian food. "I and my staff eat here everyday", he replied. That was when I realized the growing popularity of Indian food in Britain. That was 1981. Nowadays it has become a huge business in UK and in fact the food of the Indian subcontinent is the most popular food in that country.

The next month went in packing our household goods for sending them back by ship. Since I was going to set up an Energy Lab at NARI I had bought a lot of equipment that I thought I might need. Later on I found out that they were quite inadequate and hence added majority of the equipment to my lab from local sources.

We decided to take back only books, some crockery, an old music system and scientific equipment. We used to live in Diamond village quite frugally so there was hardly anything

else to take. Our apartment in Diamond village was probably the only apartment which did not have air-conditioning (AC). I thought if we got used to AC comforts then we might not be able to manage in India. Thus every July/August during the hottest and the most humid months of the year our resolve would nearly be broken but we survived for nearly 5 years without air-conditioning.

I used to have a secondhand black and white TV set which I had purchased for \$ 50 and sold it before we left for India to another student for the same price. Similarly my Toyota car which I had purchased secondhand for \$ 600 was also sold for \$ 600 which I thought was a good deal since I had used it for 5 years. It was a basic car with no air-conditioning or any other frills like radio etc.

We packed all our books and other household goods in cartons which we picked up from garbage bins outside liquor stores or bars since all the liquor was packed in nice carton boxes. Packing all this material made me quite an expert packer and I used to tell Nandini that in case my experiments at NARI fail then I can earn money by becoming a packer.

We also made a detailed list of contents in each and every box. All these boxes were put in a wooden crate and the whole shipment weighed about 1.5 tons. It was dispatched from Jacksonville, the nearest seaport. The shipping company also informed us that there was tremendous pilferage which took place at Mumbai port so we should be certain that our man

was present when the shipment arrived. So I informed my father-in-law about it who in turn informed his brother-in-law the commander-in-chief (CC) of the Western Naval Command in Mumbai! Thus the ship carrying my shipment was tracked by the navy satellite and led to an amusing incident.

When the shipment arrived in Bombay sometime in October 1981 the Commissioner of Customs was informed that an important shipment of CC has come. Thus at the Bombay port when I went to collect it quite a number of customs officers were present since they were curious about it. I gave the concerned customs officer the thick file with detailed lists of material in the boxes.

The customs officer could not believe that what I had brought in 1½ ton crate was nothing but books, my old music system, some household crockery and scientific equipment. He kept on asking me to give him some scotch whisky since majority of boxes were either of Black Label scotch or Chivas Regal! Finally he could not control himself and told me that he had never seen a more stupid person in his life who came back after 7 years' of stay in US and in transfer of residence did not bring either a car, a refrigerator, an air-conditioner or a TV but only books. He asked me why the Commissioner of Customs was informed when I had nothing to declare! Till my shipment left the dockyard he was still not convinced whether I had told him the truth or had hidden something in my boxes which he could not find!

After the dispatch of the shipment both of us decided to visit all our friends in US before leaving the country. Thus we bought 'See America' passes of Eastern Airlines for \$ 300 each which allowed us unlimited travel all over US for 1 month. This was a wonderful and very economic way to see America.

Most of my IITK friends were really amazed at our decision to go back to India. Some of them said that they would like to do a similar thing. So I told them to join me, but they gave all sorts of reasons such as they could not get good whisky in India, could not do proper shopping etc. etc.! They had really become Americans and to them these things were far more important than anything else. Now I realize that one has to be a mad person or have a "*janoon*" to take such drastic steps as we did. Later on I realized that it also requires quite a lot of guts to do so.

We also visited Washington D.C. to meet our friends the Baardas and to again see the Smithsonian Museum. I also informed Mr. Jacobs about my coming to Washington and since he was out of town during the time of our visit he asked his colleague Mr. Bill Eilers to meet me. Bill a Physics major from Harvard University was the Director of Energy Office in USAID. He had come to Gainesville a couple of times to evaluate TAET and had got a liking for me.

So he first took us to show his office and pointed out that I would be occupying his chair if I do decide to stay back. Then over a sumptuous lunch in one of the best Chinese restaurants in Washington D.C. he again asked me to rethink over

my decision to go back. He also suggested that they might use my services for consultancy later. However it never materialized because next year Bill passed away. I lost a very dear friend in the USAID Energy Office.

We left US permanently on India's Independence Day – August 15, 1981. There was a tinge of sadness in leaving the country where I had spent 7 very happy and productive years. There was also a sense of anticipation and a little apprehension regarding our future in India. In any case the die was cast and I have never brooded over the past but have looked towards the future.

We spent the next 15 days traveling in Europe. We visited a couple of our friends in Basel, Switzerland and Strasbourg, France and saw great museums and old churches in these cities and nearby areas.

We also used this trip to attend the International Solar Energy Society (ISES) conference which was held in Brighton, U.K. It gave us an opportunity to see London and the garish “Taj Mahal” of Brighton.

We arrived in hot and humid Mumbai on 30th August 1981. The putrid and sewage filled air of Mumbai airport greeted us as if to remind us that we had arrived back home. We reached Phaltan on 31st August 1981. On 1st September 1981 which was my 31st birthday both of us were given appointment letters as research scientists in NARI!





Anil's TREEO office,  
January 1980



Anil with TAET participants, Cairo,  
June 1981



Nandini on her graduation day,  
Summer 1981



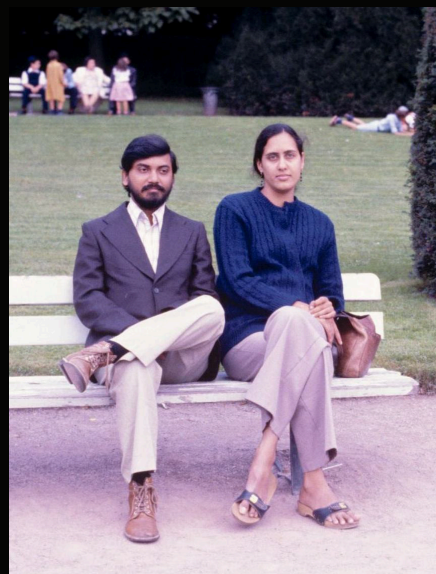
Anil and Nandini in Houston,  
July 1981



With Kiran Magiawala (IITK classmate) and Arvind Aggarwal's (another IITK classmate) wife in Silicon valley, California, July, 1981



Anil with Mehradada Samimi (an Iranian classmate at UF) in Strasbourg, France, July 1981



Anil and Nandini in a park in Geneva, Switzerland, August 1981



Nandini with Dr. Cordelia Teelmann in Switzerland, August 1981

# Epilogue

It has been little more than 25 years since I came back from US. In late 1981 when I returned, very few Indians with an IIT degree came back. Even the ones who did come back went to big cities like Bombay, Delhi, Bangalore etc. I went straight to rural Maharashtra which was as alien to me as any foreign country since I hardly knew the local language or the milieu. This was because I had mostly spent my life staying in cities in Northern India.

Why did I do it and was it worth?

I came back to India because of my arrogance. I thought with my father's political connection with Shri. Sunder Lal and others and with scientists like Dr. Atma Ram I would be able to get involved in the energy and technology scene at the National level. Also the inflated notion about my own ability made me believe that I would help change India.

India is a very old civilization and great spiritual and political leaders like Gautam Buddha, Ashoka, Akbar, Mahatma Gandhi, etc. could not change it and yet I felt in 1981 that I would play an important role in doing so. How wrong I was! India did not change but changed me and this is that story. I consider my coming back as the detoxification of Anil Rajvanshi! In fact I thank the higher forces for making me think irrationally such that I left everything to come to rural

Maharashtra! I chose Phaltan because this was the only place I knew at that time where I could do something on my own.

This is also the story of my self-discovery and I have always thanked the higher forces for giving me a place, no matter how small it is, where I could think deeply on issues of rural development, renewable energy and spirituality and reflect on them and write about them. At the same time remaining connected to the outside world via the Internet allowed me to share my thoughts with like-minded people on a much bigger scale.

My decision of coming back to rural Maharashtra was never dictated by altruism of helping India but was due to the selfish reason of doing something meaningful in my life. The challenge of using technology for rural development was tremendous. However at that time with the knowledge and wisdom that I had, I never planned for long-term goals. I just crossed the bridges as they came. In fact I have never done any long-term planning and have accepted events as they come.

However there were lots of struggles initially. Very soon after coming back the ground realities hit me and all the romance and arrogance vanished. Phaltan was a very difficult place to live and work in those days. I and Nandini lived for 2 years in slums of Phaltan in a small rented house. We moved into our house designed by me in early 1984. It is a comfortable house and has a passive cooling system which is very useful for Phaltan climate. We both used to daily bicycle to

the Institute a distance of about 3 kms one way. In 1984 my brother who was going to Saudi Arabia as an orthopedic surgeon took pity on me and gave me his old scooter which he had got in 1975 from Chief Minister's quota! That was our first vehicle.

For purchasing even small things one had to go to Pune - a town 100 km away. Now with milk, sugarcane and horticulture economy, Phaltan has grown to be a mid-size town with super markets and availability of other services. Also the communication was almost non-existent in those times. For example just to make a long distance phone call to any place was a nightmare. One had to book a call in the early morning and if one was lucky the call would materialize by the evening. So quite a few times I would hop on the bus and go to Pune just to make phone calls. The bus journey in those times took about 4 hours one way. Today the situation is much better with the availability of broadband connection and telephone facility to call anywhere in the world without a problem. Also the roads are much improved which has about halved the travel time from Phaltan to Pune.

When I came to Phaltan there was a flat piece of land where I was supposed to start building my energy lab. The Institute had a small building with almost no other infrastructure. I got an old fan fitted in my office and that was the only fan in the whole Institute. Besides one rarely had electricity so the fan was mostly non-functional! In the early days of setting up my lab, it was very difficult to get engineers and scientists. It took me nearly 4 years to get the lab functional

and hire decent staff. Even now there is a tremendous problem in getting good staff. The situation has become worse because we cannot compete with the very high pay packets being offered by the industry.

Thus now I realize that one of the biggest drawbacks in setting up the Institute in a rural area is getting good people to come and work. The rural infrastructure precludes any long-term commitment by people to work in such institutes. This has been the main reason why NARI has remained a small institute. Still even with the small staff and infrastructure we have been able to do commendable work with lots of firsts to our name. Our Institute therefore is quite well-known nationally and internationally.

During my stay in Phaltan there have been many frustrating as well as exhilarating moments. Just 6 months after coming back with reality and frustration setting in I decided to leave. So Nandini started packing our household goods. After half an hour of packing I suddenly realized that if I also go back to US then I would become another data point of the millions of Indians who are in US. I asked myself that why am I quitting now when I was so proud of taking a different path? This was the last time I ever gave a thought of quitting. Though I had to suffer through many trials and tribulations later on, the thought of leaving Phaltan never crossed my mind again.

My work at NARI has mostly focused on developing devices and policies for rural development with special emphasis

on the use of high technology for holistic and sustainable India. When some of these technologies and ideas have been picked up nationally and internationally then it has been an exhilarating experience.

For example our work on Taluka energy self sufficiency became a national policy. Similarly our pioneering work on ethanol from sweet sorghum is now established nationally and internationally. So is our work on gasifiers, safflower, lanterns, ethanol stoves, electric cycle rickshaws and vehicles for the handicapped, etc. All these pioneering efforts have inspired people all over the world. This has given me a great satisfaction. Our work is on our website which is extensively accessed worldwide. For our efforts in rural development we have also received quite a few prestigious national and international awards.

I came back with tremendous idealism to see a change in India for betterment, to see the rural areas become progressive and the general level of living of majority of people to improve. In 25 years I have seen the tremendous rise of middle class, the wealthy becoming ultra wealthy and the corruption increasing manifold. In fact it is now an important quality in a person to be corrupt, because if you are not corrupt then you are not dynamic! This is really a painful realization and also the fact that the role models for the young have nearly vanished.

In our times the role models were Nehru, Gandhi and scores of other great people who had sacrificed their lives for the

country. Now the role models are gods and goddesses of western society, the Paris Hiltons, the Bill Gates, the Sabir Bhatias, etc. The pay packet is the biggest god and role model for almost all the youngsters. The upward bound middle class with a large number of shopping malls chockfull of consumer goods and increase in their so called “standard of living” gives them a feeling that India has arrived.

Yet 60% of our rural population lives without electricity and without the basic amenities of life. Only when they start committing suicides do they enter into our national consciousness or vision field. It is these people who are the future of India and yet it is sad to see that there is no national debate or seriousness of purpose to improve their lot. All the measures by political parties are targeted towards the next elections and with their very short attention span no long-term strategies and appropriate implementing mechanisms are being put in place.

Most of the times during my 25 years’ of stay in Phaltan I have interacted with the rural population, but also had occasions to interact with the highest “rulers” of the land. The quality of these leaders leaves much to be desired. One of the greatest tragedies of India has been its corruption which is like a cancer and is eating into its entrails. The first causality in a corrupt society is governance and because of the lack of governance most of the fundamental issues have not been tackled in India.

India is a young society where 54% of its population is below 25 years’ of age. The aspirations of this young society,



majority of whose members live in rural India are not being fulfilled. Most of the modern rulers of India have come from urban settings and have no understanding of the rural areas or the welfare of the farmers who are the mainstay of the country, with the result that they spout the slogans of rural development but do not know how it can be achieved.

Yet to find the solutions to the problems of our rural population offers the greatest challenge for any engineer or technologist and I feel that most of the Indians who are abroad should help in trying to solve these problems with the help of extremely advanced tools of science and technology. After all whatever we are and wherever we are is because of the early life that we spent in this country. The real challenges are in India and if we can improve the lives of our rural population then we would have solved the problem of 1/5<sup>th</sup> of mankind!

I have no regrets about coming back to India and especially to Phaltan, because I cannot imagine having done all the things that I have done here anywhere else - more so in the US. Besides living in rural Indian setting teaches you many things.

For a starter it makes you spiritual! With hardly any avenues to spend money and availability of very little amenities one starts living a simple life which is the first step towards spirituality. Initially one does not like it but with time one starts to enjoy the benefits of simplified life. Thus I recommend such a life for almost everybody who believes in sustainability

because when one becomes sustainable in personal life then the world automatically will become sustainable. One can live a simple, high thinking and emotionally satisfying life in much less energy.

This does not mean that we should live a primitive life. In fact the extremely high technologies that provide modern tools of communication and power are an important part of reducing the energy consumption thereby promoting sustainable living. What is needed is to curb our greed for resources which promotes consumptive lifestyle.

This is a very hard lesson to learn for people who live in big cities, metropolises or western countries. The daily seduction by high-powered ad campaigns is very difficult to thwart. However when simplicity becomes a way of life then one becomes quite immune to the effects of such seduction!

I therefore thank the higher forces who made me come to rural India so that I could develop this feeling of simplicity in my daily life and now I feel that it is my duty and responsibility to spread the message. This I have been doing through my work, speeches and writings.

Internet has provided a powerful tool to spread the message and I feel satisfaction in the knowledge that all the NARI work and my writings occupy a very high place on the Google search engine. Thus our work is read extensively and hopefully inspires people round the world. This is attested to by the fact that we receive voluminous e-mails and our work and writings are quoted on other sites and in blogs.

I have always believed that the purpose of human beings is to first become happy and self contented and then give something back to the society. Coming back to India and Phaltan has helped me to do both these things.

As I have become internally more secure, the level of contentment has also increased. Similarly I feel that with our work we have been able to give back something to the society.

Nevertheless in all these matters one should try to follow one's inner voice. If the parameters of success are to be dictated by others then one cannot claim to be internally secure and content. The measures of success and failure should be honestly evaluated by oneself.

Thus to a lot of people I may have been a failure when after so much promise in US I left everything to come back to rural India but I use the measure of my contentment and find that I have not done that badly!

I still have regrets that probably in my lifetime I will not be able to see India as a land of prosperity and contentment, where most of our citizens do not have to follow the rat race of US or China where the greed for materials and resources knows no bounds, but will be able to live a life which is meaningful, happy and contented and thus sustainable and holistic. It is the India of my dreams and if in any way I have been, or can continue to be able to contribute a little towards this goal then I feel that my life has been a success.

[Next Chapter. Romance of Innovation](#) (our work in NARI)

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